D66
v.137

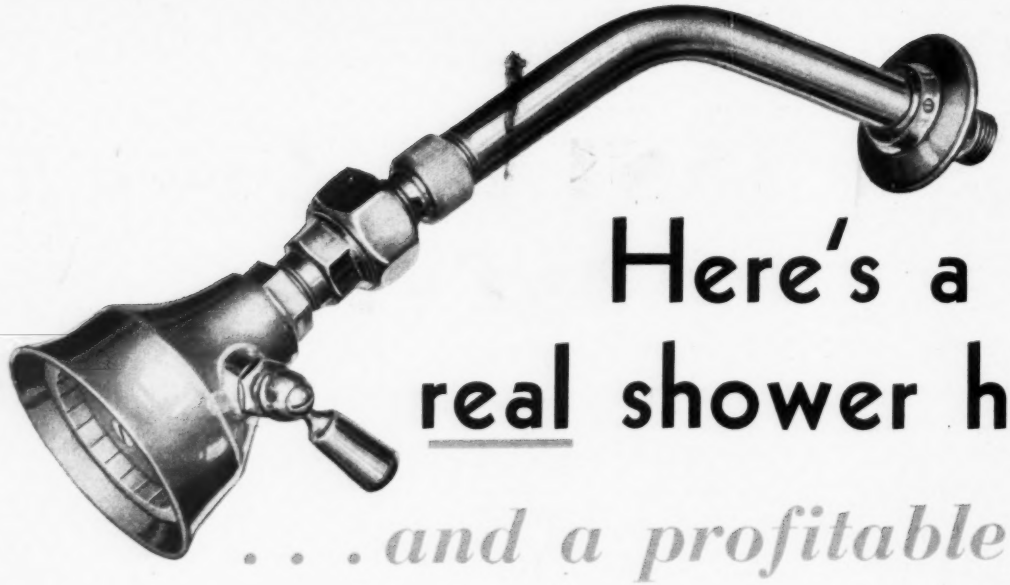
DOMESTIC ENGINEERING

[The AUTOMATIC HEAT section will be found commencing on page 61]

To bring more business to dealers and gas companies and to improve today's admittedly spotty form of co-operation, DOMESTIC ENGINEERING now suggests Sixteen Rules for Gas Appliance Merchandising » » » » » » Page 22

OCTOBER 31, 1931

Plumbing & Heating Contracting and Merchandising



Here's a real shower head

. . . and a profitable one

HERE'S a shower head that will delight the heart of almost any man. When he steps into the shower, this head can be instantly adjusted by a touch of the finger to send its stream high or low—a feature that tall men readily appreciate. A slight turn of the handle regulates the water from a coarse flow to a needle-fine stinging stream.

This is the MUELLER H-5400 4-inch face shower head with self-cleansing device, adjustable ball joint and arm with set screw flange. It may be obtained in either nickel plate or gleaming Chromium finish.

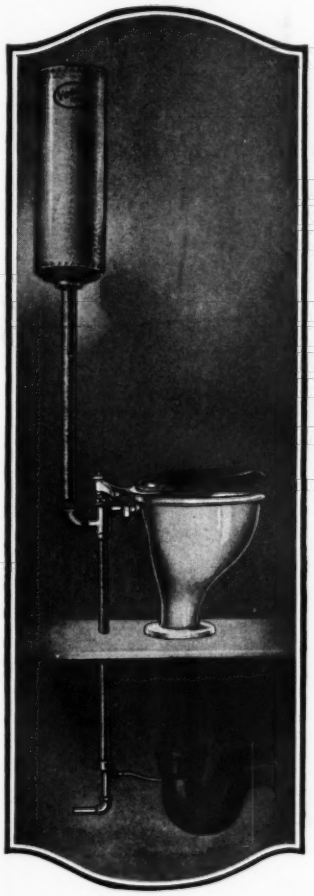
It will pay you to specify MUELLER fittings on new construction jobs, for in MUELLER you will find the rare combination of thoughtful design, careful workmanship and laboratory control of materials. This means consumer satisfaction with the plumbing job—which means profit for you.

MUELLER CO., (Established 1857) *Factory:* Decatur, Ill. *Branches:* New York, Dallas, Atlanta, Los Angeles, San Francisco, Chicago. *Canadian Factory:* MUELLER, LIMITED, Sarnia.

MUELLER

(Trade-mark Registered U. S. Pat. Off.)

For serviceable dependable closets during Winter's freezing temperatures . . . . .



NUMBER ONE VOGEL FROST-PROOF CLOSET

Simple in operation. Sturdy in construction. Half a million in operation.

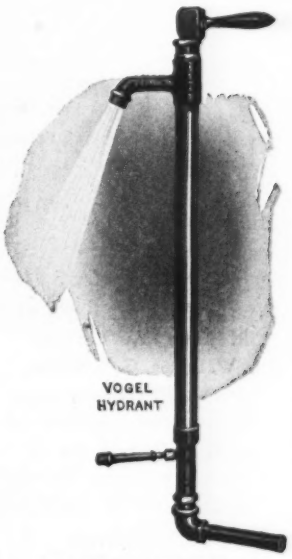
INSTALL VOGEL FROST-PROOFS

And right now is the time to put them in, before the ground freezes.

So sell them to your customer—insure satisfaction for him and a profitable job for yourself.

And Vogel Frost Proof Hydrants

can also be depended upon to function during winter's coldest blasts, making sure a convenient water supply when needed.



VOGEL FROST-PROOF HYDRANT

Literature, imprinted with your name and address furnished promptly upon request.

JOSEPH A. VOGEL COMPANY

Wilmington, Del. St. Louis, Mo.

See inside back page for VOGEL advertisement on No. 10 and 10-A Closet Combinations

VOGEL PATENTED ***Frost-Proof*** **PRODUCTS**

DOMESTIC ENGINEERING

Plumbing & Heating Contracting and Merchandising

Established 1889

Vol. 137, No. 3 | October 31, 1931 | Whole No. 1955

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NEW YORK—
Rooms 1706-1707, 110 East 42nd St.

PITTSBURGH—
Room 604, Chamber of Commerce Bldg.

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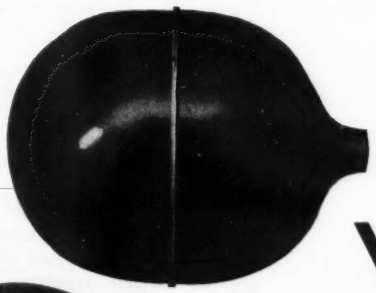
. . . it is going to help make BUSINESS BETTER!

HARD RUBBER

IS BECOMING A LEADING FACTOR IN YOUR LINE



Standard Oval and Round Floats

DURING THE NEXT FEW MONTHS

WE are going to stress the point that HARD RUBBER is going to play an important part in bringing back GOOD TIMES

we have been Moulders Since 1897

Special Floats for Tank Valves

STOKES FLOATS

and TANK BALLS *of HARD RUBBER*

Look for the S Mark of Quality

meet the demand for economy, because they will outlast several floats of other materials, whose combined cost may be much more than that of a single STOKES Float. Furthermore, STOKES Floats may be guaranteed for the life of the tank.

ASK YOUR JOBBER

You, as a plumber with experience, know that it pays in the long run to deliver only FIRST GRADE Merchandise. Every one of your customers, large or small, will appreciate the economical features of STOKES HARD RUBBER PRODUCTS.

Joseph Stokes Rubber Co.
Trenton N.J.
Canadian Plant: Welland, Ont.

HARD RUBBER IN EVERY CONCEIVABLE FORM — MOULDERS OF PLASTICS

Between Ourselves

YOU all have heard a lot lately of gas company co-operation. In fact you probably learned of it through DOMESTIC ENGINEERING, *because we wanted our readers to take a leading part again in the sale of gas appliances. But has any workable plan of co-operation been put in practice in your city?*

Your Editor

WE FOUND many gas companies doing nothing, some because they have not been sold on the value of co-operation and others because they did not know how to put a practical plan at work. We also found that a few dealers were getting real co-operation, with the result that the sale of appliances and of gas were both growing. In most cases, however, the co-operation offered was incomplete and likely to prove ineffective.

So to help you recover your gas appliance business, DOMESTIC ENGINEERING offers in this issue a definite program which you can use in your city. It will promote sales for you and add to the sale of gas so that you can count upon winning the support of the gas company itself.

IN MANY places people by now have had enough of a taste of chilly weather to remind them of the past winter and of any trouble they may have experienced with their heating plant. The experience was no doubt annoying and they don't want to go through it again this coming winter, especially if it can be avoided at a rather slight cost. Then, too, many systems are in need of complete renovation before winter sets in. It's business worth going after. The articles in the AUTOMATIC HEAT section are especially designed to assist heating contractors in selling their products and to inform them about the very latest in technical matters.

THE Plumbing and Heating Merchandising section this time deals with the industrial field as a market for oil burners. The story is based on the experiences of Shaddock's, Inc., heating contractors of Buffalo, N. Y., who have been highly successful in selling oil heat to industrial firms. The article describes a dozen trouble jobs that this company has handled—telling what the trouble was and how it was corrected. Sometimes they repaired the burner that was already installed—frequently they sold a new burner. What this firm has learned is told in ten rules that they follow in selling, installing and servicing industrial burners.

"WE find your journal of the greatest service and consider that the information as set out is the most up-to-date of any journal of this description."—Crossle & Duff, Ltd., Melbourne, Australia.

"ORIFICES for Steam Radiators" is the title of an article commencing on page 30 which is devoted to the practical considerations of this subject for the benefit of those installing orifices. Sterling S. Sanford and Carl B. Sprenger, both of whom are associated with the Detroit Edison Co., are the authors and the article resulting from the combined efforts of these two experts contains a wealth of helpful information for the heating contractor.

SIX years ago John G. Kolbe, a plumbing contractor and one of the leading merchandisers of Richmond, Va., put into operation a type of merchandising program that at first glance might seem out of place in a plumbing shop. He started a cooking school in his place of business, with demonstrations and lectures by experts in the culinary art, and the enterprise has continued each winter season ever since. That it is popular is proved by the yearly attendance of 10,000 women. In his plumbing work, Mr. Kolbe has specialized in the sale of gas ranges and kitchen equipment, and the purpose of the school is to demonstrate the use of the equipment he is selling. Leads also were developed that resulted in the sale of plumbing fixtures. In an article in this issue, commencing on page 24, the clever merchandising methods of this contractor-dealer are fully described.

THE owner of an old fashioned hotel doesn't have much chance now-a-days to get visitors in town to stop at his hotel. They will go to the modern hotel, or if there isn't one in town, those who are driving will invariably keep on going until they come to a place where there is one. An article in the next issue will describe two hotel remodeling jobs which have proved to be investments of the highest type for the owners.

The man who is so busy that he does not have time to read his trade paper is like the man who was so busy chopping wood that he did not have time to sharpen his axe.

NEW!

AT LAST

A FLUSH-VALVE CLOSET FOR THE PRIVATE HOME

(AS WELL AS FOR LARGER BUILDINGS)

PATENTED AND PATENTS PENDING

"Murdock"

HAS SOLVED THE PROBLEM AND NOW ANNOUNCES

The "Murdock" Alternater Closet

THE OUTSTANDING ADVANTAGES OF WHICH ARE

It Operates on $\frac{1}{2}$" or $\frac{3}{4}$" Supply Pipe According to water pressure and length of pipe.

It Is Practically Silent in Action A refinement that has long been desired.

It Uses Only $2\frac{1}{2}$ Gallons of Water Yet the flush is copious and strong—not sluggish.

HOW IS THIS ACCOMPLISHED? By a strictly new alternating flush valve in combination with a specially constructed bowl that sends the water first, exclusively to the rim; second, exclusively to the jet; third, back to the rim to refill. The alternations of the flow of water cause, first, a swift silent swirl that thoroughly cleanses; second, a powerful jet flow compelling complete expulsion; third, an adequate re-fill.

IT OPERATES WITH THOROUGH SATISFACTION when water is delivered to the valve at the rate of 12 or more gallons per minute whereas the usual requirements of closets with flush valves are from 30 to 40 gallons per minute—much of which is wasted. It can therefore be installed with smaller supply pipes than are usually required for ordinary closets operated by flush valves.

NOT JUST ANOTHER FLUSH VALVE ON A REGULAR CLOSET BOWL, but a complete new combination consisting of a new type bowl with a new type valve, employing an entirely new alternating principle of flushing.

NOT A "FREAK" TYPE OF ANY KIND, but a beautiful, efficient, reliable and durable fixture. Can be placed under a window, in a corner or under stairs.

NO CRAMPED TRAP NOR RESTRICTED WATER-WAYS.

A DECIDED FORWARD STEP IN CLOSET BUILDING

THAT MEETS A HITHERTO UNSATISFIED DEMAND

MADE SOLELY BY

1853 ***The Murdock Mfg. & Supply Company*** 1931

CINCINNATI, OHIO

Will gladly furnish further particulars and prices upon request. "We hope you like it."

MAKERS OF THE "GENUINE" MURDOCK WATER DEVICES SINCE 1853

DON'T BUY THIS NEW PUMP

until you... Compare

WE don't want a single dealer to buy our new Cid Pump, unless he is convinced it is the finest shallow-well pump on the market. We *do* want our distributors to sell every dealer who will compare the Cid with every other pump, and will reach his own conclusion that the Cid is the quality pump of the country. All of *those* dealers are going to sell a lot of Cids at $65!

To make the comparison easy, we have taken the Cid apart before your eyes, on these pages. Study the pump, feature by feature. Use the Value Comparison Guide to compare with whatever pump you have previously considered best.

Goulds Pumps are sold all over the world for every pumping service, many of which involve engineering far more difficult than that in pumping water. The result of this engineering is plainly evident in the Cid.

Cid Pumps are made in 3 sizes for shallow wells, and also include deep well heads with 4″, 6″, 8″, and 12″ stroke.

VALUE COMPARISON GUIDE

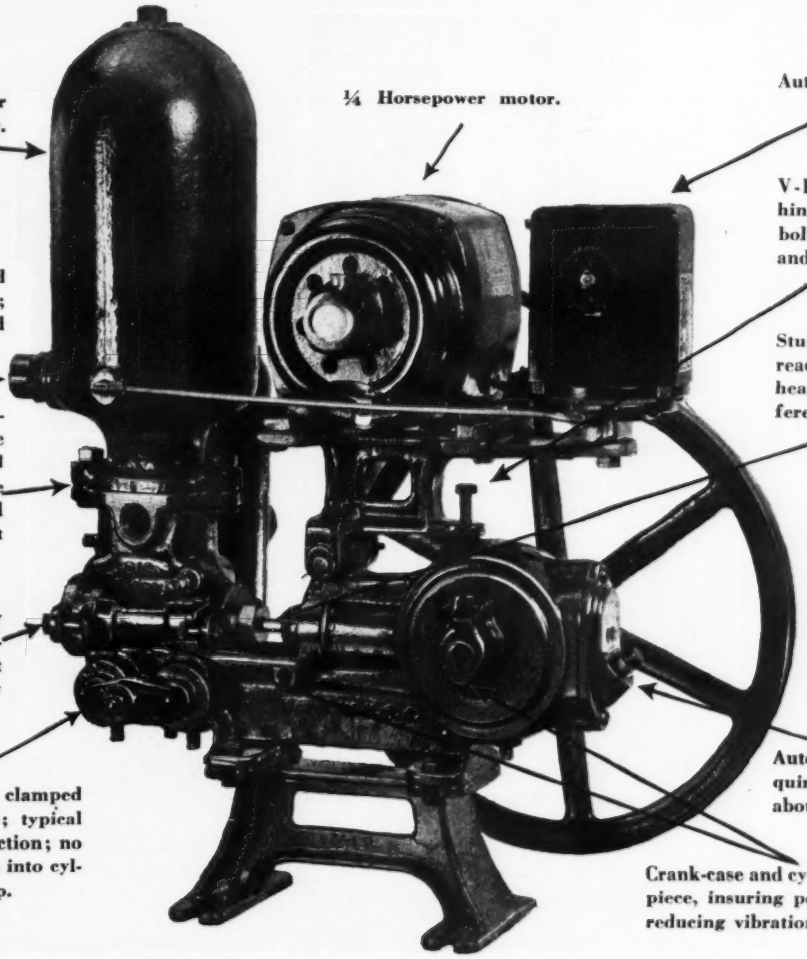
	Cid Pump	In the spaces below fill in facts about any other pump of similar size
PRICE	$65	
CAPACITY	250 gallons per hour	
RELIEF VALVE	Located inside cylinder; adjustment protected against tampering, or accident	
AIR CHAMBER CONNECTION	Of ground flange type; easily removed to service discharge valves; no threaded connections into cylinder to rust and strip	
PISTON ASSEMBLY	Easily reached; removable as complete unit with screw driver	
SUCTION VALVE COVERS	Clamped on with heavy yoke; typical power boiler construction; no threaded connection to rust and strip	
STUFFING BOX	Easily reached; no overhead or side casting to interfere	
CRANK-CASE AND CYLINDER	Cast in one piece, insuring perfect alignment, reducing vibration and friction	
LUBRICATION	Entirely automatic	
DRIVE	V-Belt, with single bolt to raise motor and take up slack	
CONTROL	Automatic; self-starting, self-stopping	
HORSE POWER	One-quarter	
AIR CHAMBER	Extra large; insures steady flow	
MAKER	World's largest pump specialists with over 82 years experience	

CID LIST PRICE: ATTRACTIVE DISCOUNTS • SHALLOW WELL PUMP . . . 250 GAL. CAPACITY **$65**

GOULDS PUMPS INC.

SENECA FALLS . . . NEW YORK

THE PUMP WITH RESERVE CAPACITY · RESERVE POWER · RESERVE STRENGTH



Large air chamber insures steady flow.

¼ Horsepower motor.

Automatic control.

V-Belt drive has hinged base, with bolt to raise motor and take up slack.

Relief valve located inside cylinder; adjustment protected against tampering.

Stuffing box easily reached; no overhead casting to interfere.

Air chamber connection of ground flange type; easily removed to service discharge valves; no threaded connection to rust and strip.

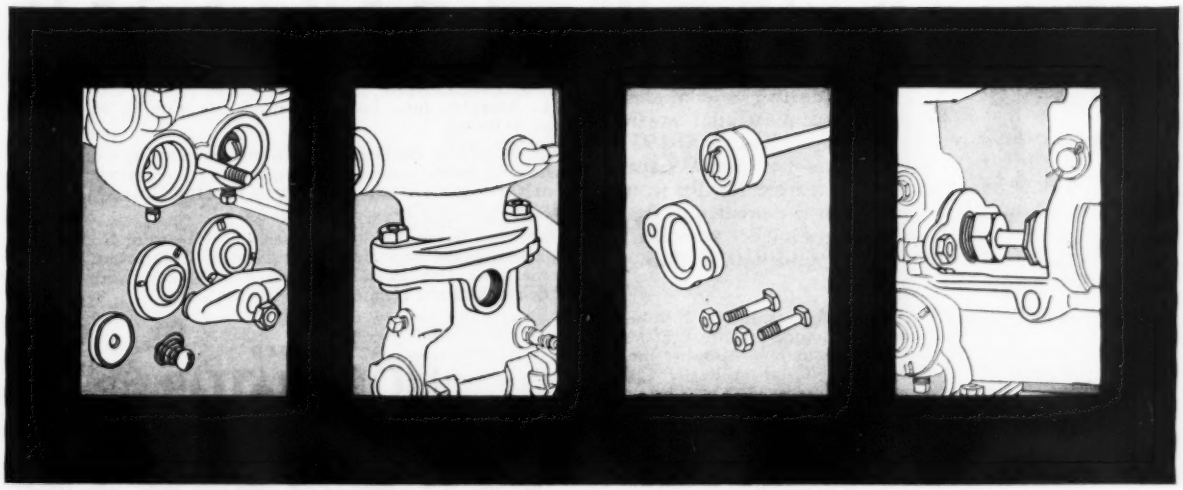
Piston rod easily reached, and removable as complete unit with ordinary screw driver.

Automatic oiling; requires oil refilling about twice a year.

Suction valve covers clamped on with heavy yoke; typical power boiler construction; no threaded connections into cylinder to rust and strip.

Crank-case and cylinder, cast in one piece, insuring perfect alignment, reducing vibration and friction.

MADE BY THE WORLD'S LARGEST PUMP SPECIALISTS



A pair of pliers and a screw driver are all you need to take out suction valves. Illustration shows: valve covers removed, hand hole clamp, "hex" nut, valve and valve spring.

Discharge valves located directly below air chamber, which has ground flange connection to cylinder. No threads to rust tight.

Unobstructed cylinder opening on end of pump. Held by two bolts. Plunger removed and replaced as complete unit with a screw driver.

Unobstructed stuffing box opening. No overhead casting in the way. Can be reached with wrench from top or sides.

Fairchild Aerial Photo

In New York City

COMFORT, freedom from over-heating and under-heating, and maximum steam economy are assured for these typical 1930-1931 New York City office buildings by the Webster MODERATOR System of Steam Heating. Results from more than 50 installations warrant the prediction that true "Control-by-the-Weather" will soon be "standard" equipment for first-grade office and loft buildings everywhere.

1—444 Madison Avenue; Associated Architects, Robert D. Kohn, John J. Knight and Frank E. Vitolo; Consulting Engineers, Eadie, Freund and Campbell; Heating Contractor, J. L. Murphy, Inc.; Owners, Taxon Realty Co.; Managers, Gresham Realty Co.; Builders, Gresham Construction Company.

2—Plaza Building; location, 625 Madison Avenue; Architects, Sloan & Robertson; Consulting Engineers, Syska & Hennessey; Heating Contractors, Jarcho Brothers, Inc.; Builders, Shroder & Koppel; Managers, Brown Wheelock Harris Vought & Co., Inc.

3—608 Fifth Avenue; Architects, Engineers and Builders, E. H. Faile and Company; Heating Contractors, J. L. Murphy, Inc.; Owners, Ogden Goelet Estate.

4—Squibb Building, Fifth Avenue and 58th Street, New York; Architect and Engineer, Ely Jacques Kahn; Heating Contractor, J. L. Murphy, Inc.; Builders, Shroder & Koppel; Managers, Cross & Brown.

5—29 Broadway; Architects, Sloan and Robertson; Consulting Engineers, Syska and Hennessey; Heating Contractor, Jarcho Brothers, Inc.; Owners, Adway Realty Co.; Manager, Charles F. Noyes Co.

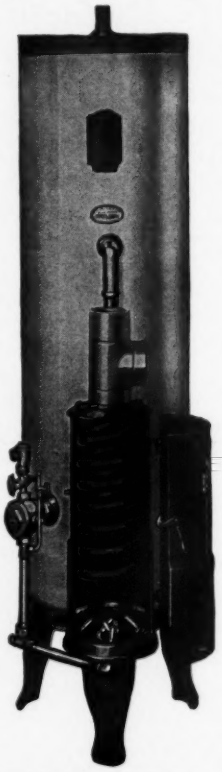
6—80 Broad Street; Architects, Sloan and Robertson; Consulting Engineers, Syska and Hennessey; Heating Contractors, Jarcho Brothers, Inc.; Owners and Operators, Marex Realty Corp.; Managers, Hanford and Henderson.

WEBSTER
MODERATOR
SYSTEM
OF STEAM HEATING
"Controlled by the weather"

a Mod 6

Warren Webster & Company, Camden, N. J.
Pioneers of the Vacuum System of Steam Heating
Branches in 60 principal U. S. Cities—Darling Bros., Ltd., Montreal, Canada

HOTSTREAM AUTOMATIC STORAGE HEATERS



No. 20SA Hotstream Automatic Storage Heater, Side Arm Type, List Price $66.00 Complete

The Common-Sense Price

Broadens Your Market

These are no times for carrying all eggs in one basket. The plumber with heaters for some particular market may find himself loaded up with slow moving merchandise—those people may not be buying freely this year.

Your Hotstream market this year is spending money—for Hotstream buyers include all classes of people.

Because Hotstream is priced at a figure that anyone can afford. People of means today are buying shrewdly—they quickly see that the Hotstream gives them everything they can hope to get from *any* hot water heater—at a substantial saving; likewise people of smaller incomes, to whom a dollar saved is a dollar earned, instantly realize they can afford the Hotstream since it so adequately supplies their many every day hot water needs.

Right in your own community, Hotstream's irresistible price will open up sales prospects in every home, apartment and store building. It stirs up business—sale after sale at a profitable margin—*now when you want business!* And every Hotstream in operation is a source of satisfaction to its owner that sooner or later ripens into additional sales through owner recommendation.

Write today for your copy of the 1932 Hotstream Catalog—just off the press.

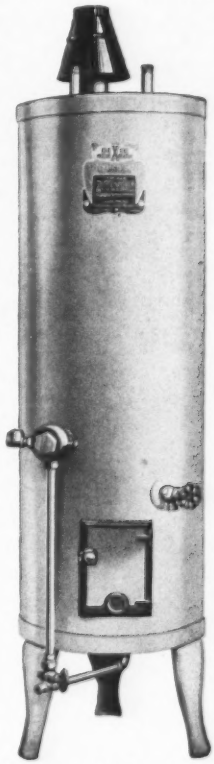
THE HOTSTREAM HEATER CO.

"Makers of Heaters that Heat"

CLEVELAND, OHIO

Manufacturers of a Complete Line of Automatic Storage Heaters, Tank Heaters, Indirect, Gasoline and Kerosene Water Heaters.

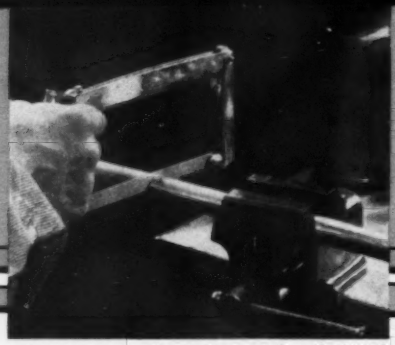
Represented in Canada by W. H. Cunningham & Hill, Ltd., Toronto



Dixie Automatic Storage Heater, "Internal Type." Made in three sizes, 20, 30 and 40 gallons. List Prices: $55.00, $70.00 and $85.00

HOTSTREAM AUTOMATIC STORAGE HEATERS

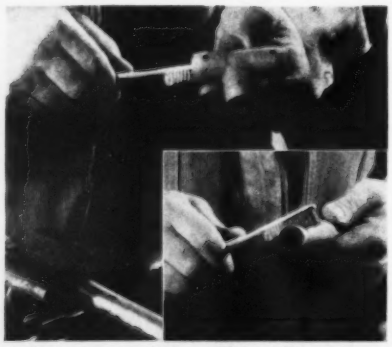
CUT . . . REAM . . . CLEAN . . . FLUX TORCH!



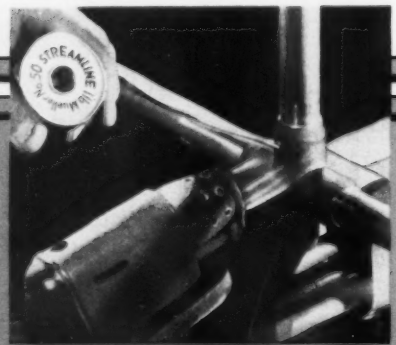
1. Fifteen seconds with a hack saw cuts through a ¾-inch pipe.

2. Take the burr out with a file.

3. Clean the pipe ends and the inside of the fittings with sandcloth.



4. Put the flux on both pipe and fitting. Use your finger if you prefer.



5. Heat the assembled pipe and fitting with a blowtorch. Two drops of solder (for a ¾-inch pipe) in the feed hole

A HACK saw, a file, a piece of sandcloth, a blowtorch, a can of STREAMLINE soldering flux and a spool of STREAMLINE solder wire are all that are required for an installation of STREAMLINE hard copper pipe and fittings. Gone are the back-breaking days of threading pipe. Science now takes the place of sweat. Mueller makes it possible for the journeyman to be again the craftsman of the soldered joint. A journeyman's skill, a few drops of solder and a law of nature now combine to make the tightest joint known to the trade.

The connection between Mueller STREAMLINE hard copper pipe and Mueller STREAMLINE fittings is positively leakproof. Expansion will not work it loose nor will vibration affect it. This Mueller patented joint is stronger than the pipe itself.

Mueller STREAMLINE fittings are supplied in full range and in sizes of ¼-inch to 6 inches, inclusive.

If you are not thoroughly familiar with this patented joint, consult your jobber or write for our catalog.

Mueller Brass Co.

PORT HURON, MICHIGAN

Three Generations of Brass Making

Remember that . . .

K-3395—SPEAKMAN Anystream Self-Cleaning Shower Head (Pat. Jan. 2, 1923).

No matter where you install a shower or what kind you put in there is a certain type of head for every installation . . .

WE have developed these heads for residences, hotels, country clubs, hospitals, institutions of all sorts, schools and universities.

Each has the Anystream, Self-Cleaning principle, permitting the adjusting instantly of the water's volume and force—from a needle bath to a flood shower.

K-3416—SPEAKMAN Anystream Self-Cleaning Triple-Cluster Shower Head for use where a large amount of water is desired.

K-3399 *(Patented)*
Speakman Anystream Self-Cleaning Wall Type Shower Head with ½ inch I. P. female inlet in centre of back and arranged to operate by a 5/16 inch hexagon wrench. For hospitals and institutions.

They can never stop up!

All of these heads are shown in our 16-page bulletin. Shown also are regular and special showers, together with roughings-in. Two pages of shower piping layout data are included.

This bulletin should be in the hands of every plumber. You can obtain it from your jobber, or from us direct.

SPEAKMAN COMPANY
Wilmington Delaware

SPEAKMAN SHOWERS & FIXTURES

"I'M keeping a fresh supply of the DOMESTIC ENGINEERING Remodeling Posters always on hand. I'm using them not only in the windows of my store but on the walls inside and on my trucks and automobile.

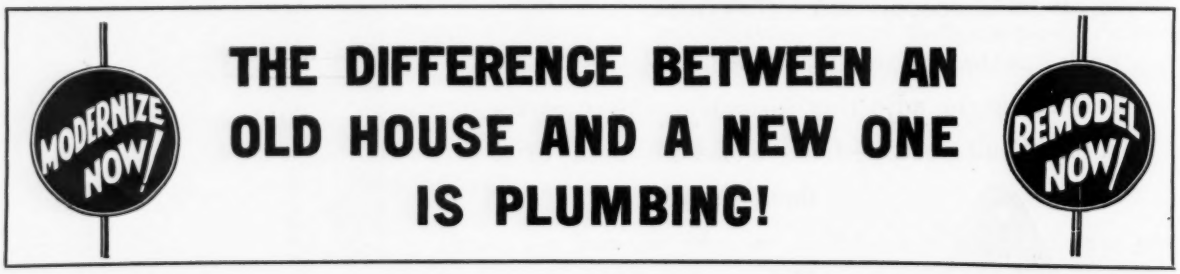
"Do they get attention? Yes. That brilliant orange and the sharp black will get attention anywhere.

"Just keep them changed and fresh looking all the time and they'll do a good job. I'm going to have them printed on my letterheads, envelopes, billheads and other stationery. I've used them in newspaper ads and I'm going to use them again for that purpose."

You'll want to get in on these Remodeling Posters. They'll help put the remodeling idea over in your community and they'll establish you as remodeling headquarters.

Order a supply today. Put them to work for you at once. Use them and their slogans everywhere and anywhere you wish.

"I'll Say I'm Using Them!"



The actual size of these posters is 25 ins. by 4½ ins. They're printed in orange and black and are commanding enough to get attention no matter where you display them. Here are the low prices. Order your supply now.

100 posters (50 plumbing and 50 heating)	$1.00
50 posters (25 plumbing and 25 heating)	.50
20 posters (10 plumbing and 10 heating)	.20
10 posters (5 plumbing and 5 heating)	10

»

DOMESTIC ENGINEERING

1900 Prairie Avenue Chicago, Illinois

WISECO PRODUCTS

WISECO
COMBINATION LAVATORY SUPPLY AND WASTE FIXTURE
with Pop Waste

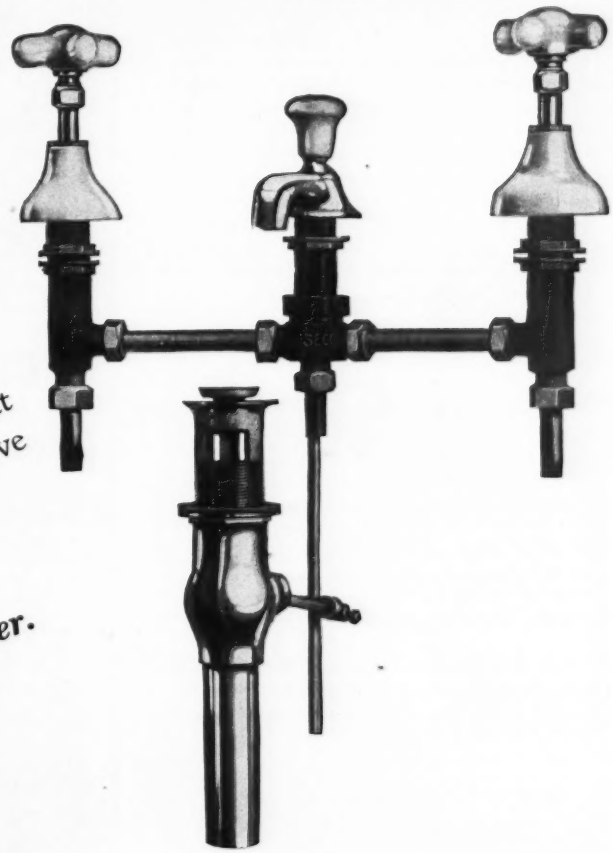
Here's a real leader for you.

It may be furnished either in China or All Metal Trim. Nickel Polished or Chromium Finish.

A real quality product that still sells at a competitive price.

Easy to install.

Ask your jobber.



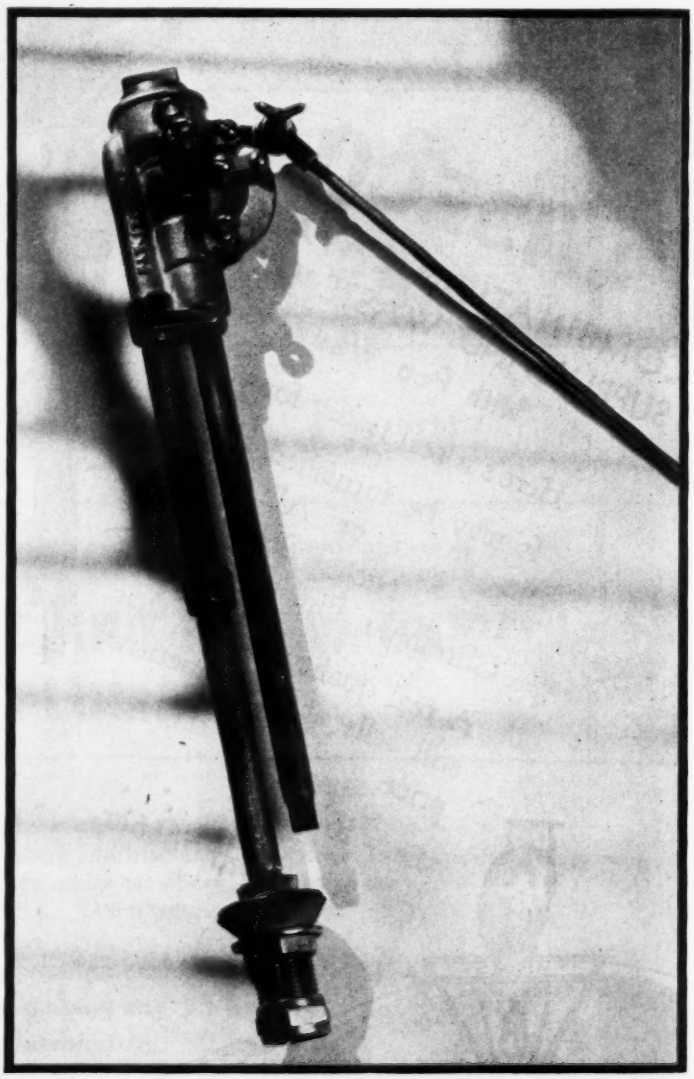
WISECO TRADE MARK INC.

THE STANDARD OF QUALITY
SINCE 1877

J. B. WISE, INC.
WATERTOWN :: NEW YORK
NEW YORK · PHILADELPHIA · ATLANTA · CHICAGO · LOS ANGELES · SEATTLE

FOR CONVENIENCE, SPEED, ECONOMY . . .

STOCK M-VB PACKAGED BALLCOCKS



IN LITTLE things that mean economy, as well as in the line itself, M-VB seeks always to meet practical conditions, within the plumbing trade. For example, one of the biggest little things ever discovered to bring order into the stockroom and to realize new speed and convenience—all of which is economy—is the packaging of M-VB Ballcocks. The unit illustrated is the No. 1 ballcock with 9-inch refill tube and 8-inch float rod. On the side of the box is printed a skeleton outline of the ballcock with arrows and complete descriptions which serve as a quick guide to replacement installation.

Are you acquainted with the complete M-VB line of closet tank fittings—and are you using it to build profit business? Fair price, quick installation and strong, rugged construction are outstanding features of every item. M-VB fittings are skillfully made of fine materials and thoroughly tested—plumbers find that they can depend on them for developing an ever-increasing number of satisfied customers.

Ask your jobber for prices on M-VB packaged Ballcocks—also on the whole M-VB line of ballcocks, tank levers and flush valves. M-VB is the profit line.

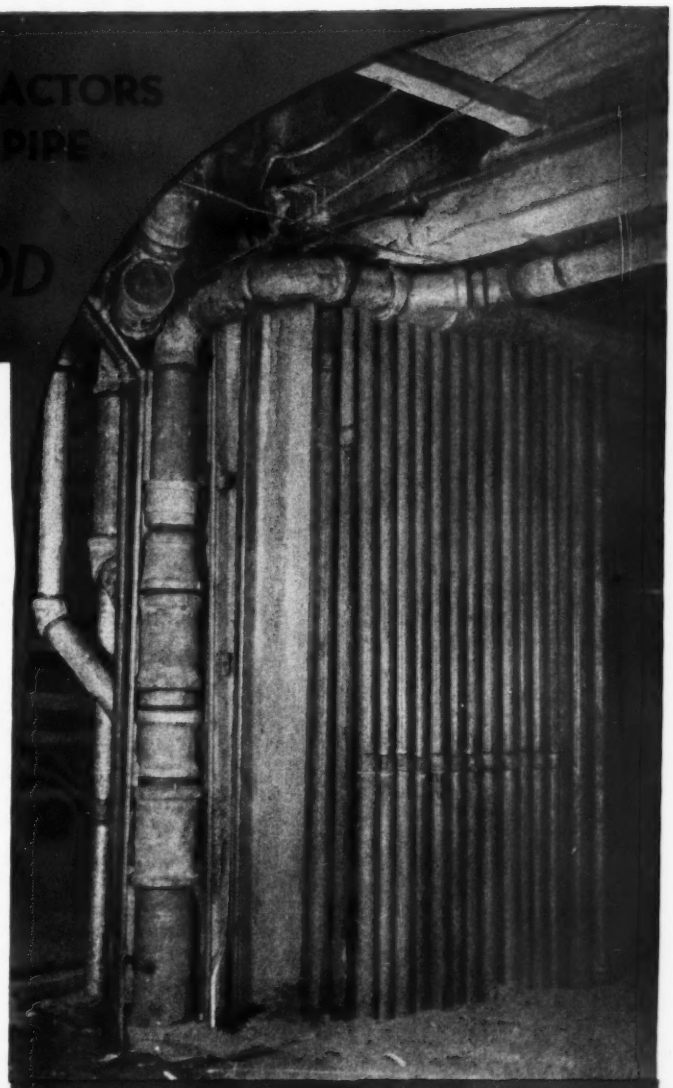
MORENCY-VAN BUREN DIVISION
Scovill Manufacturing Company
STURGIS MICHIGAN

M-VB

SCOVILL

COMPLETE LINE OF CLOSET TANK FITTINGS

WHEN LEADING CONTRACTORS SPECIFY YOUNGSTOWN PIPE AGAIN AND AGAIN IT MUST BE GOOD



YEAR after year . . . in job after job . . . the country's leading plumbing and heating contractors consistently use Youngstown steel pipe in their installations of plumbing systems, heating systems, sprinkling systems and refrigeration systems. Such whole-hearted approval must be based on proven performance . . . and it is!

From experience these contractors know that Youngstown pipe is always true and uniform; they know that it cuts, threads, bends and welds easily on the job, actually saving installation time; and they also know that when it is once installed, Youngstown pipe assures a good, workmanlike job.

Use Youngstown Pipe on your next job and prove to yourself what a good pipe it really is.

THE YOUNGSTOWN SHEET & TUBE CO.

One of the oldest manufacturers of copper-steel, under the well-known and established trade name "Copperoid"

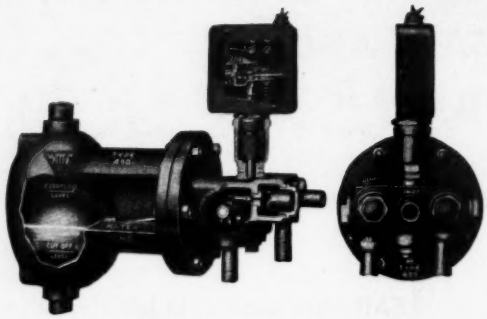
General Offices—YOUNGSTOWN, OHIO

YOUNGSTOWN

GALVANIZED SHEETS PROTECT

SAVE WITH STEEL

New



After more than a year of research and experimental work by our veteran engineers and mechanics, we offer an entirely new line of Watts Boiler Water Feeders that are *different* and possess many super-features.

In this brand new line there is a Feeder especially designed for every type of oil, gas or coal-fired boiler. The design includes low water pressure and cut-off switches, which can be installed in any type of Watts Feeder. The float is connected by a rod to a rotating shaft on which the feed and overflow cams are mounted. There is no sliding friction. The moving part rotates in bearings, eliminating wear and danger of sticking.

The float has a simple adjusting mechanism which permits easy change of the feed level. There is no possibility of the non-metallic disc being injured by foreign matter nor of its failing to close tight. A bronze strainer keeps dirt out of the system and is easy to clean. They are ruggedly built throughout and have no wearing parts.

With very little effort, you can make a nice additional profit—every time you or one of your neighbors sell an oil or gas burner—by suggesting the installation of a Watts Boiler Water Feeder to automatically keep the water level in the boiler above the danger point and thus eliminate cracked sections or a burned boiler.

Write for our Feeder booklet and special proposition to contractors.

WATTS

BOILER WATER FEEDERS

WATTS REGULATOR COMPANY

Makers of Water and Steam Regulating Devices Since 1874

249 Lowell Street Lawrence, Mass.

John G. Kelly, Inc., Distributors, 210 East 45th St., New York, N. Y.

W. H. Cunningham & Hill, Ltd., Canadian Distributors
269 W. Richmond St., Toronto 2, Canada

WATTS REGULATOR CO.,
249 Lowell St., Lawrence, Mass.

Without obligation, please send a copy of your Feeder Booklet and your special proposition to contractors.

Name .....

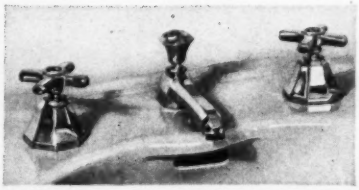
Address .....

City ..... State .....

HAIR-BREADTH

ACCURACY HERE

ADDS TO THE PLUMBER'S PROFIT



Kohler fixtures deserve Kohler fittings, their equal in beauty of design and serviceability.

CUSTOMERS aren't so much concerned about the thought that goes into the making of fittings as about the hot and cold water that comes out. But *you* have to go deeper than the surface and look for fine points of structure and design. You have to be sure that care at our end will mean comfort at your end . . . fittings that save you trips and trouble, and add more names to your books.

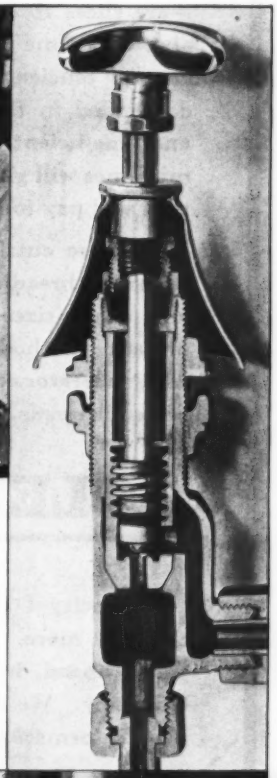
Talk to some other plumber who makes it a habit to use Kohler real-red-brass fittings on all jobs, and he'll soon tell you what won him over. Accuracy of manufacture, for one thing. The interchangeable unit of a lavatory valve fits into the outer casing within .004 of an inch! Deep, fast-action threads, always completely engaged, eliminate side-sway and protect against unnecessary wear. Interchangeable handles are so delicately poised that valves open and shut at finger-tip pressure.

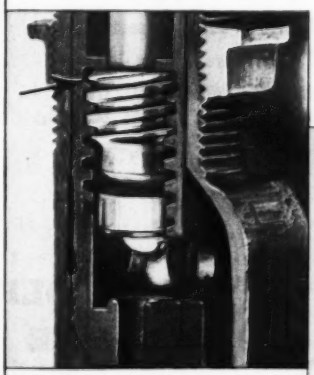
And Kohler accuracy is closely guarded. Each fitting must pass through no less than seven major inspections to maintain Kohler standards of material and workmanship—including tests of the casting, threads, buffing, plating, and a final test before packing under 125-pound water pressure.

Compare Kohler fittings simply by weighing them in your hand. Heavier because they contain an extra amount of virgin copper, finished with a thicker, more uniform coating of hard and durable chromium plate, these fittings are obviously sturdier and more efficient. Designs are modern, correct. Action is quick and precise. Kohler Co. *Founded* 1873. Kohler, Wisconsin. Manufacturers of Kohler Electric Lighting Plants.

ABOVE—One of the seven major inspections made on each Kohler fitting before it reaches you. Here, the workman is water-testing the casting.

RIGHT—Cross-section of Kohler K-8020 lavatory valve. Note the accurate machining of all parts—especially the .004" fit of the interchangeable unit into the outer casing.

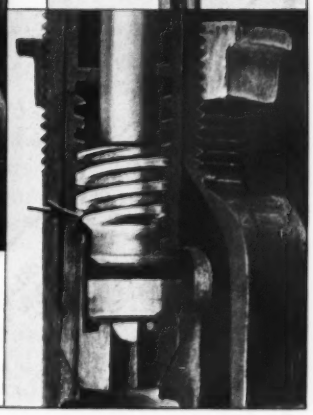




OPEN

The double Acme threads on Kohler valves are always completely engaged. This prevents side-sway, and protects against wear.

CLOSED



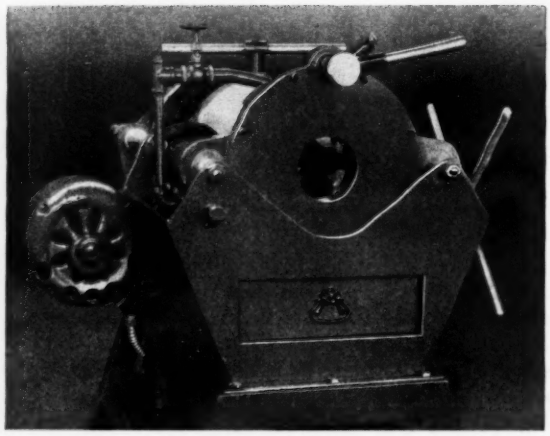
KOHLER OF KOHLER

PLUMBING FIXTURES AND FITTINGS

DANGEROUS DAYS—

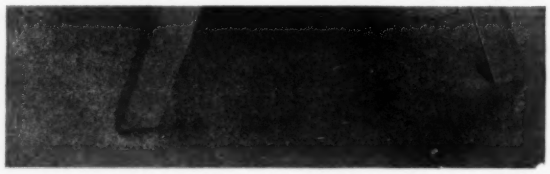
—are these to continue the use of slow, obsolete, time wasting machines. Increased efficiency in every line will be demanded in the next few years. Slow and inefficient time consuming pipe machines will give way to new equipment that will pay for itself by its saving.

Compare cutting off 4 inch pipe in 9 seconds, threading 4 inch in 42 seconds, and other sizes in proportion, to your present method. Instant die change; easier operator control and always smooth perfect threads.



"TOLEDO" No. 1-2-4 PIPE MACHINE—

—capacity 1 to 4 inch will give all of this and more. This new "TOLEDO" is years ahead in design and operating efficiency. We will gladly send you complete information on request.



PLEASE SEND ME WITHOUT OBLIGATION COMPLETE INFORMATION ON THE NEW "TOLEDO" No. 1-2-4

NAME .....

STREET .....

CITY .....

STATE .....

D.E.

THE TOLEDO PIPE THREADING MACHINE CO. **TOLEDO, OHIO**

ALSO ON DISPLAY AT NEW YORK OFFICE AND SHOWROOM, 72 LAFAYETTE ST.

"TOLEDO"

Our Industry

WOULD YOU LIKE TO SELL MORE GAS APPLIANCES? HERE'S YOUR CHANCE

Some Years Ago—

The sale and installation of gas burning appliances was an important part of the business of DOMESTIC ENGINEERING'S readers. In fact, gas fitting was an established division of the trade.

A Few Years Ago—

Gas companies started out to sell more gas by adding to the number of appliances on their lines. Their financial strength and their ability to absorb tremendous sales expense because of recurring profits on the sale of fuel, made it almost impossible for an independent dealer to compete. This business became of less and less value to the dealer.

A Year Ago—

Resentment over utility policies built up a formidable political opposition which brought anti-utility merchandising laws to Oklahoma and Kansas and similar bills in a dozen other states.

Early in 1931—

The American Gas Association aroused by this political pressure adopted a set of co-operative dealer principles announced as the avenue through which such dealers could regain their profitable appliance business.

In June 1931—

The National Association of Master Plumbers at its Milwaukee convention was told of these principles and approved them.

In the Past Three Months—

Some dealers have seen evidence of this cooperation, many have not. Some utilities are trying it out, many have ignored it. Putting these broad general principles of cooperation into practical use has been beyond the capacity or desire of many executives, while others have interpreted them to give little actual relief to the dealer.

On October 31, 1931—

A definite program which dealers, manufacturers and utilities can use profitably is suggested by DOMESTIC ENGINEERING. The following pages outline this program, which offers the dealer a fair opportunity to prove his salesmanship and gives the utility a method by which it can increase the sale of its real product—gas.

DOMESTIC ENGINEERING'S Plan

We suggest this plan to replace misunderstanding with active co-operation among gas companies and manufacturers of and dealers in gas appliances. In agreeing to the plan each party recognizes his obligation to work effectively in performing his particular function. That is:

The gas company will concentrate on increasing the sale of gas.

The gas appliance manufacturer will concentrate on increas-

[Jot down your idea of the value of each item to you as a dealer]

1. Only gas appliances bearing the seal of approval of the American Gas Association testing laboratory shall be considered as referred to in these rules. _____
2. Dealers as individuals shall have complete and free option in the choice of the one or more approved appliances which they elect to buy, sell and install. _____
3. The utility shall take no step limiting the dealer in his choice among the American Gas Association approved appliances. _____
4. No appliances or merchandise not directly related to the use of gas shall be sold by gas utilities. _____
5. In all merchandising activities, the mark up of all gas appliances shall be consistent with present day merchandising practices. _____
6. Co-ordinated advertising of approved appliances should be developed by gas utility companies and local dealers and the gas company should give all reasonable assistance possible to the dealer in advertising displays and sales assistance. The advertisements of gas companies should be promotional copy on the advantages of gas as a fuel and should not be used for the purpose of selling a particular make of appliance. _____
7. The deferred payment feature of the merchandising activities shall be on an economical, sound basis. In localities where successful dealers can and do carry their own time paper, the utility should not offer a deferred payment plan which calls for unreasonably low down payments or an excessively long contract. Such service shall be available to all reputable dealers and paper will be purchased covering the sale of any approved merchandise which is sold for use in connection with the consumption of gas sold by the company. _____
8. All sales agreements assigned to the company will be accepted without recourse to the dealer. The company reserves the right to investigate the credit of the customer in each individual case and to refuse to purchase any paper in cases where the customer's credit is not considered good. _____
9. There should be no premiums given. If trade-in allowances are made in connection with the sale of gas appliances, all co-operating agencies shall par-

Would this plan help you get

for Gas Appliance Sales

ing appliance sales and on building a strong dealer organization.

The dealer who participates in this co-operative effort will concentrate on increasing the sale of gas appliances.

This DOMESTIC ENGINEERING plan is based upon experiences in localities where co-operation has been tried and offer a definite sales program on which dealers, manufacturers and gas companies can build an increasing volume of profitable business.

[Jot down your idea of the value of each item to you as a dealer]

ticipate on an equal basis. These allowances should be recognized as a promotional expense to increase the sale of gas.

10. The gas company recognizes that the primary function of its sales department is to increase the sale of gas. Remuneration to those in the sales department consequently should be based entirely upon the additional load which their sales efforts secure, that is, no commission is to be paid on the sale of an appliance. Gas company salesmen shall co-operate impartially with all dealers, limiting their sales efforts to the protection of the utility company's interest in the sale of gas. This looks to the development of the situation where utility salesmen will act more as sales supervisors in consumer contacts through dealers.

11. On appliance sales made directly by the gas company without any assistance from a dealer, the profit is to be used by the gas company as a promotional fund for increasing the sale of gas.

12. If the gas company decides to consign appliances for display as a part of its promotional activity, the preference of the dealer as to the makes of the appliances shall be requested, and the dealer shall receive on consignment the makes which he prefers.

13. The gas company will not wholesale or install.

14. Bids for installations of appliances, where customers express no preference of a dealer, are to be secured from among dealers active in the co-operative program.

15. The period of free service on any appliance shall be limited to not more than one year. It is recognized that service calls offer opportunities to dealers to develop additional business and opportunities to the utilities to insure customer satisfaction with gas fuel. For that reason the dealer and the utility should promptly interchange information on all trouble calls.

16. Utility display of merchandise to include all American Gas Association approved appliances which dealers generally stock and push. Manufacturers, dealers and the utility company shall work out details of terms governing the display.

more gas business? Write us

Fig. 1—The main display room on the first floor. The office space is on the balcony in the rear. The wide stairway to the upstairs demonstration or lecture room is on the lefthand wall just outside of the picture in the front

10,000 Prospects Visit This Plumbing Store Every Year

"MR. JOHN G. KOLBE cordially invites you to attend the opening of his new demonstration and lecture room on Tuesday, Wednesday, Thursday and Friday, January 22-25, inclusive, at 5 West Grace Street, Richmond, Virginia." This is the basis upon which Mr. Kolbe, a plumbing contractor and one of Richmond's leading merchandisers, has built and is continuing to build an outstanding business.

The entire structure shown in Fig. 2 is used in this merchandising work. The first floor contains the main display room which is shown in Fig. 1. In the rear there is a balcony where all of the office work is carried on and it is here that kitchen and plumbing plans are developed and drawn. Incidentally, the balcony has its display features just as the main floor. Note the four squares set in the balustrade. These are individual room gas heaters of the fireplace type.

Fig. 2—The entire structure including the first and second floors is used by Mr. Kolbe in his merchandising work. The demonstration and lecture room is on the second floor

This room cleared and in use for demonstration and lecture purposes is shown in Fig. 3. The number of people present answers the question which may have been suggested by the foregoing invitation regarding how many responded to it. On the lefthand side of the room, just outside of Figs. 1 and 3, because it is up near the window, a wide stairway leads to the second floor where the regular demonstration and lecture room is located, the downstairs room being used only on special occasions. The rear end of this room is seen in Fig. 7.

Another question which undoubtedly has been raised by the description thus far is what is there about plumbing that makes it a paying enterprise for a contrac-

tor to give lectures and demonstrations, and what plumbing subject is there that will hold the popular attention on repeated performances so as to make the space which is devoted to this return a profit? The answer is that all of this centers about a cooking school which Mr. Kolbe has conducted in his establishment. In his plumbing work, he has specialized in the sale of gas ranges and kitchen equipment. The cooking school has been employed to demonstrate the use of the equipment he has to merchandise.

His first school was conducted in 1925, and it has been run continuously during each winter season for the past six years. There has been a slight variation in the method of conducting the classes over this period of years. However, the general practice adhered to has been to have three classes a week, one being for business women in the evening, the second for home women on one afternoon and the third for colored women on another afternoon. Mr. Kolbe engages the services of the best talent available for the supervision of his classes. One year, the home service director chosen was a graduate of the School of Household Science and Arts, Pratt Institute, Brooklyn, N. Y., who had had several years experience in home economic work. On another occasion, the local county home demonstration agent conducted the classes.

The popularity of the entire enterprise is indicated by the yearly attendance which totaled approximately 10,000. One of the features of the course was developed in the form of a cookbook. As it progressed, recipes were worked out in the classroom and these were incorporated in the book. In addition, other recipes were received from the different women in Virginia and these also were placed in the cookbook. Next, the classes were broadcast over the radio and radio listeners were given the opportunity to contribute their favorite recipes and the best of these were selected and tested. The result was that at the end of the course a large number of tested recipes covering practically the entire field of cooking were on hand. These were printed and bound in indexed loose-leaf notebooks. Each woman who had attended the course faithfully received a copy. Each recipe carried the name and address of its author and women were able to obtain a copy only by completing the Kolbe cooking course. In effect, it served as their diploma.

The value of this to Mr. Kolbe is that the women were known to show the book to their friends. These friends would see the names of prominent Richmond women in

Fig. 3—This shows the beginning of Mr. Kolbe's cooking school enterprise. It started on the first floor display room as an experiment. The experiment proved successful to the extent of drawing capacity crowds of three hundred and fifty people which required traffic police in front of the building

Fig. 4—Here is a view of the show window illustrating before and after effects possible in kitchen equipment

it, and also they would see several pages featuring the gas range Mr. Kolbe has for sale. Most certainly they would see the name of Kolbe and in most cases they would determine to have a copy of this cookbook for themselves.

The radio talk was given one night each week for sixteen weeks and the total number of returns received approximated five hundred. Mr. Kolbe does not have a record of the number of sales that resulted from these inquiries but these sales he did make through the radio contacts included plumbing, heating and the complete installation of kitchen equipment.

It cannot be said that any one class showed the greatest amount of enthusiasm. Equally intense interest was evidenced by business women, housewives, and colored women.

It has required the services of seven salesmen to follow up the prospects that these schools have developed. The maximum attendance at any one meeting totaled two hundred and ninety. The average ran two hundred and thirty. Each one attending was required to fill out a card which contained a space for the woman's name, address and telephone number. In addition, it asked what kind of a gas range she is now using; how old is it, is it satisfactory, and can the home service director help you? Ten per cent of the women who filled out

How Mr. Kolbe Finds 10,000 Prospects Every Year

1—When did you conduct your first cooking school?	In 1925.
2—How many times have you run it?	Six times, once each year.
3—Have you a record of the attendance at these schools?	10,000 each year.
4—Did you develop the cookbook as the course progressed? It is noticed that you have recipes from women located in states other than Virginia. Were these received as a result of your radio programs?	Yes.
5—How many nights each week were these radio talks given?	One.
How many weeks?	Sixteen.
What were the total number of returns you received from them?	Approximately 500.
How many of the inquiries resulted in sales?	We do not know.
What did the sale include, usually?	Plumbing, heating, and complete kitchen outfitted.
6—What were the results of your cooking school?	Fine.
7—What classes showed the greatest amount of enthusiasm? The Thursday, 8 to 10 evening class for colored people; the Tuesday evening class for business women; or the Tuesday, Wednesday, Thursday and Friday afternoon classes for home women?	All!
8—What were some of the maximum attendances at these meetings?	290.
What did the average run?	230.
9—Did each one fill out a card?	Yes.
10—What percentage of those attending the classes indicated that they were prospects?	10 per cent.
11—How many of these prospects resulted in sales?	5 per cent.
12—In addition to selling ranges and general kitchen equipment, how many leads resulted in the sale and installation of plumbing fixtures?	Seventeen.

13—What have you learned from your past courses which you might summarize in the form of several rules for conducting future courses?	Enlarge our better relationship with customers.
14—How many salesmen do you have in attendance at these meetings?	Seven.
What is the total number of salesmen you employ?	Seven.
15—What have been some of your experiences in selling equipment?	Stick to the golden rule.
16—Do you work on only those who indicate they are prospects or do you include those who seem to be satisfied with their present equipment?	Five letters go to all who attend, and on the fourth letter a personal call is made.
17—Have you run into any interesting lay-out problems as a result of selling equipment for remodeling kitchens?	No.
18—To what extent have you used billboard advertising?	Very little.
19—Have you any definite record as to returns from this?	No.
20—What was the occasion for the view shown in Fig. 5?	A cafeteria I sold to a church and then did the serving and made $388.00 the first night.
21—Did you provide only the kitchen equipment or did your director of your home service department also cooperate in this event?	No; this is a part of our service.
22—What were the approximate results of this?	$388.00 net to church one night.
23—What is the story about the view shown in Fig. 6?	See article.
24—What is the story about the view shown in Fig. 7?	See article.
25—How are they selected, trained and paid?	On commission.
26—What methods do you employ in contacting and selling hotels and institutions?	Personal and daily visits together with mail.

these cards indicated that they were prospects. Five per cent resulted in sales. While the effort was directed along the lines of selling gas ranges, leads were developed so that the sale of plumbing fixtures was possible.

As for following up prospects, every women in attendance, regardless of whether or not she was satisfied with her present equipment, was sent five letters. When the fourth letter was sent, a personal call was made by the salesman. All of these sales activities were conducted outside of the demonstration room. However, upon leaving the classes, any woman interested in the purchase of a gas range had the opportunity of inspecting the various models on display when passing through the showroom.

Some billboard advertising was done by Mr. Kolbe, but he has no definite record regarding the returns from it.

Other advertising which has proved to be very beneficial has resulted from Mr. Kolbe's work with various organizations. The complete story is told best by him in the following:

The photograph shown in Fig. 5 represents a cafeteria

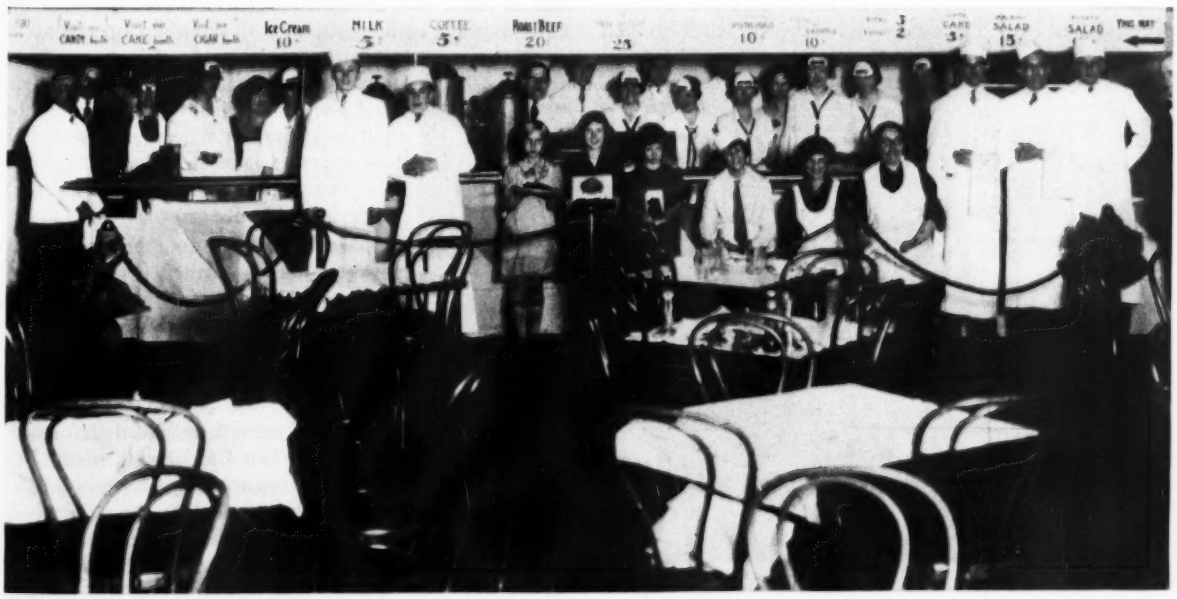


Fig. 5—This photograph shows a cafeteria in a church which contains the equipment sold and installed by Mr. Kolbe. The first supper given with it was planned and supervised by him and netted a return of $388.00

in a church. When the writer sells an institution, hotel, hospital or church, he incorporates in his sales program, if he is successful in getting the work, the plan of going to the building, organizing the workers and actually doing the serving for the church.

In this particular case the cost of the equipment installed amounted to $3,000.00, including kitchen equipment, dining room equipment, plumbing and all of the accessories that go along with it.

Our practice is to undertake to serve the largest supper that the church has during the year. We are very particular not to serve a small crowd. We make them pick out and give us the largest affair that they have for the year, so we can reap silently as much advertising from the event as possible. From Fig. 5 you can see we added a lot of individuality to this particular event.

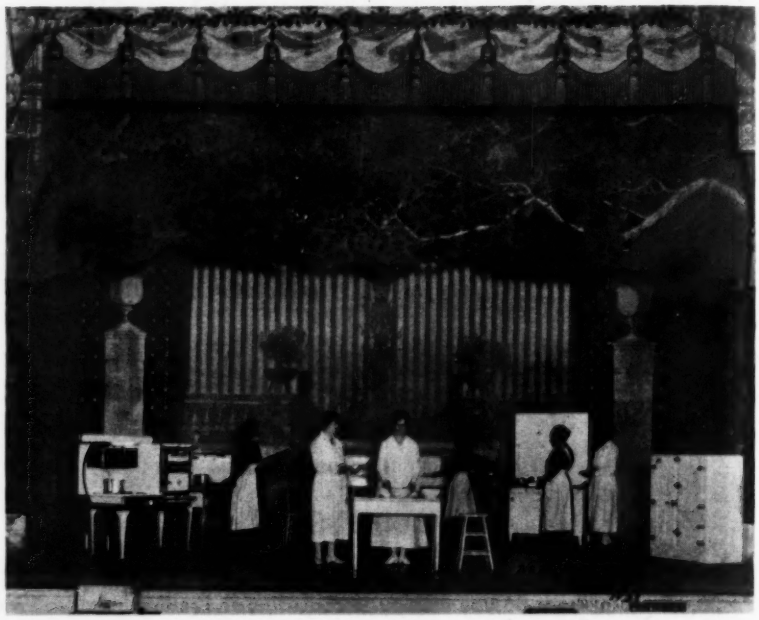


Fig. 6—In this instance, the cooking school was conducted in one of the Richmond theatres in co-operation with a local newspaper. The stage setting is shown

Instead of allowing the church people to put up some boards on top of horses and then spread cloths over them, as they usually do at church suppers, I have worked out a plan by having a captain or chairman for tables and this chairman gathers, from the members, enough card tables for the occasion. Then I have another chairman to gather up the covers for the tables. Then I have still another chairman go out and gather up enough candle sticks, so when the crowd begins to come, all of the illumination, other than that furnished by the candles, is turned off and only the candles are used.

It was very gratifying to know that the food we served was so pleasing and attractively arranged on the counter that the people actually bought twice as much as they were able to eat. You can very readily see why so much money was made from this particular event. We enlisted every person with any energy at all into the affair and each one had a duty to perform. I did not allow anyone to interfere with the other person. You can see all classes in the photograph.

I had one Sunday school class of boys to take the soiled dishes from the tables, another class to replace the soiled dishes with clean ones. I took an older class of girls to work behind the counter, and then another class in the kitchen.

It is interesing to know that the treasurer of the Sunday school was not speedy enough to make change as fast as the crowd came in, and it was necessary to install another cash register with another operator, in order to keep down congestion. That was the only place that I fell down, and the other cash register had to be put in operation fifteen minutes after the crowd began to come in. After this event I was very happy to report $388.00 as the net proceeds.

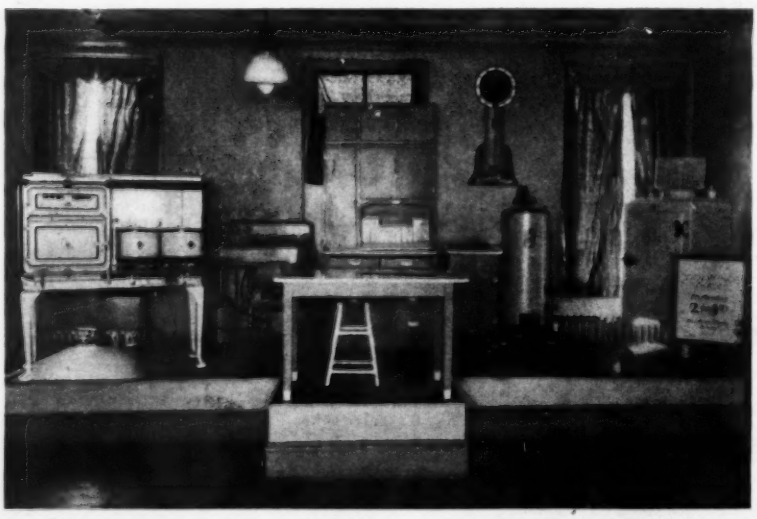


Fig. 7—This shows the stage setting in the second floor demonstration and lecture room when the classes were first started. A ventilating system and an enlarged platform with a more convenient arrangement became necessary as the school progressed

We know of another interesting event. The photograph is not attached, however. We went into a church where we wished to sell $1,100 worth of equipment, and the particular ladies' society in charge of the purchase only had $60 in the treasury. They had me talk before their organization. When I finished, a number of the ladies arose and said it was important to go ahead with the work even though it would cost in the neighborhood of $1,100 and they only had $60 in their treasury. In this particular event I told them that if they would give me $60 upon completion of my

work and give me interest bearing notes for the remaining balance to be paid over a period of twelve months, I would guarantee to them a supper which would give me another $100.00 in thirty days. The chairman of the society happened to be a very courageous sort of person and she told her society that she was willing to take a chance if I was. It was unanimously voted that night before I left and I left with a signed contract for $1,100 worth of equipment.

The equipment was installed and instead of my receiving $100 as guaranteed they made enough money from the first supper to pay me $200 in cash, which made $260 in all. After that they had three suppers and instead of stretching the payments out twelve months like agreed, the entire account, including the interest anticipated on the notes, was paid in four months. I am told the treasurer now has $1,000 in the treasury as a result of this installation and all bills are paid.

Referring to Fig. 6, in this particular kitchen the writer sponsored the setting of the kitchen, and furnished all of the equipment and all of the stage work. This was done for a local newspaper. Our cost was written off by the advertising we received through the newspaper columns.

We have at least fifteen photographs of various cooking schools that we have entered in connection with various newspapers.

The writer is a little proud of the fact that when there is a cooking school in Richmond we are always given the preference in the matter of accepting or rejecting the opportunity to co-operate with the newspapers on any of their publicity stunts.

It should be pointed out that the view shown in Fig. 7 illustrates our stage setting when we first installed a cooking school in our auditorium. Since then the demand for education along this line has developed to such an extent that we were compelled to put in a ventilating system and enlarge the platform to make it more convenient. Also, a kitchen more workable than the one shown in the photograph was necessary.

The view in Fig. 8 shows a most outstanding event from the standpoint of education. It was a hot roll contest that we put on. We had 140 entries, and gave away $100 worth of prizes. There were nine prizes in all. Enthusiasm, interest and energy were displayed in this contest. The rolls were judged and scored by the Government score card, and we had two nationally known home economic girls to make the awards. When the entries came in we had one lady to receive and register them in a book with the name of the person. A duplicate number was stuck in the rolls and the book was filed in the safe. When the judges made the awards they had no possible way of telling whose rolls they were. We did this to avoid partiality.

I could go on and tell you a story on this particular event that would require several pages.

I would like to call your attention to a cake contest that was given in our cooking school at the end of the 21 lesson class. This was an outstanding event because it was the closing of the class. Instead of having the regular cooking class on the regular day we had the entries come in prior to the end of the school. On the closing day of the school we invited the ladies to be our guests. We made up about 15 gallons of light punch and cooked 500 different sizes, shapes and kinds of cookies, and when the people came in to find out about the awards, we had the punch and cookies. We of course cut the prize winning cakes and passed them out among the class to be tasted. We called this cake contest and the closing of the school, "breaking bread" and having tea.

Very much to my surprise at the end of the class the Wednesday afternoon class presented our home service director with $50 in gold; the Thursday night class, colored, presented her with a pearl necklace, which was valued at around $25, and the Monday night class presented her with a beautiful overnight bag. This made

Fig. 8—This shows the result of a hot roll contest which was conducted in which one hundred and forty women competed

the event very enjoyable to our director, as well as gratifying to myself, and, best of all, it built up a public relationship that will be hard to break down.

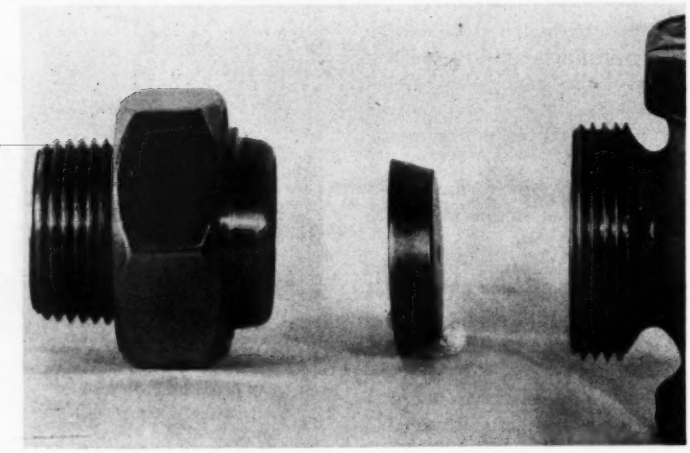
The photograph shown in Fig. 3 really shows the beginning of our home service department.

A real energetic salesman came into my store and sold me on the idea of a cooking school. This was before the writer conducted his own school. This salesman made such a good job of selling me that I went to the expense of taking two-thirds of all of my equipment out of the store, which represents a space 30 ft. by 155 ft. We built a platform in the store, put in chairs, and built ten booths 4 ft. by 8 ft. each. Then we went out and sold these booths solely to cover the expense of erecting and decorating them. These booths were sold to coffee people, extract people, electric refrigeration people, and various other concerns who are always interested in cooking schools. The auditorium you see in Fig. 3 is in my store. We have a capacity of 350. The first day we only had 150 people. The school continued on through the week and by Friday there were 350 people seated in our store and there were traffic police in the front of the building letting the crowd in and out. They thought some trouble had arisen. In order to make this more attractive the writer had a wedding awning put over the front door and hung a sign on this awning, "Cooking School Today."

The photograph in Fig. 3 shows the interested crowd, and the results already have been described. This school cost $1,400 for 4 days.

Orifices for Steam Radiators

In the paper read before the American Society of Heating and Ventilating Engineers and published in DOMESTIC ENGINEERING for June 27, 1931, radiator orifices were discussed from the technical standpoint. The following article is devoted to more practical considerations for the benefit of those who wish to install orifices



This photograph shows an orifice and valve assembly

By STERLING S. SANFORD* and CARL B. SPRENGER**

STEAM heating systems must be designed to keep buildings comfortable on the coldest winter day. The size of the radiators is determined by this one condition which exists for but a few days out of the year. Radiators which are just the right size for the extremely cold days are too large for the more moderate weather which makes up the greater part of the heating season. In such weather buildings equipped with ordinary heating systems are overheated if the radiators are filled with steam all of the time. If the size of the radiators could be changed as the weather changes, we would not have to turn off steam to prevent overheating. We would merely enlarge the radiators as the weather grew colder and make them smaller for warmer weather, and we would always have just the right amount of heat being delivered to keep our building at the proper temperature. Obviously this is out of the question. We can, however, accomplish the same result by using only part of the radiator surface when the maximum amount of heat is not needed. By controlling the flow of steam into the radiators we can fill them to whatever extent is needed to keep the building comfortable at the different outside temperatures.

Fig. 1—Orificed stamping used in radiator valve unions

One way of controlling the flow of steam is to insert an orifice plate, a plate with a small hole in it, in the inlet to each radiator. The amount of steam flowing through an orifice depends upon the pressure ahead of the orifice and the difference in pressure between the two sides of the orifice. By controlling the pressures we can regulate the flow of steam so that it is some fractional part of the amount ordinarily needed to keep the radiators full. When the outdoor temperature is 35 deg. Fahr. the radiators need deliver only about 50 per cent of the heat required in zero weather, and thus if the flow of steam is reduced 50 per cent the building will be kept at the proper temperature. At any other outside temperature, the proper indoor temperature can be maintained by correspondingly reducing the amount of steam entering the radiators.

The simplest type of radiator orifice plate is

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a thin cup-shaped stamping inserted in the radiator valve union in such a way as to act as a gasket. Those who have used this type of plate have had good results with a stamping made of medium brass about 0.018 in. thick. The stampings can be made with conical sides as shown in Fig. 1 and if proper care is used in shaping the die, the stampings will fit in the unions of different makes of valves. The orifices may be punched or drilled and reamed. If drilled they should be drilled somewhat smaller than desired and then reamed to the required size. The orifices should be sized according to the radiators with which they are to be used. The correct sizes for thin stampings are given in Table I and also by the curve in Fig. 2.

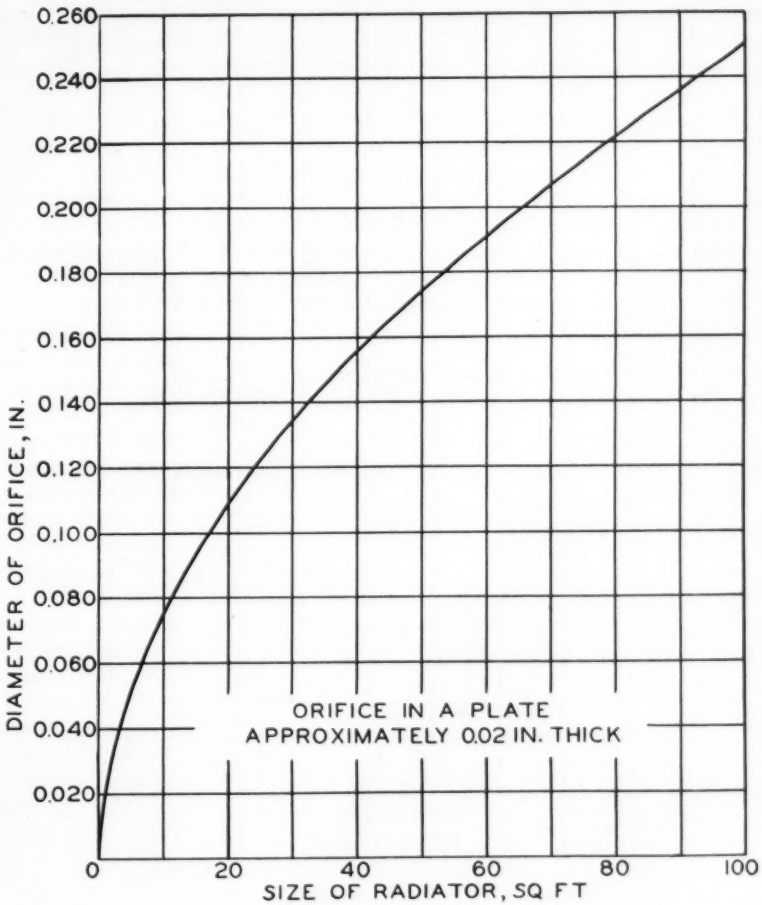


Fig. 2—Size of radiator orifices

Stampings are comparatively inexpensive to make in quantities. The usual charge for making the die is of the order of $40 to $55. The additional cost of the blank stampings is about $10 or $15 per thousand depending upon the size. For an additional cost of about $3 per thousand a small hole for starting the reamer can be punched in the center of the stamping. If there are enough orifices of any one size, the holes can be punched to the size desired without any drilling or reaming. Usually there is such a variety of sizes required that it is more economical to obtain the desired sizes by reaming the holes. If a taper pin reamer is used, one reamer can be used for several sizes of orifices. The punched hole should be made of such size that the small end of the reamer can be inserted in it. By using a stop on the reamer for each size of hole, the orifices can be made very quickly. Care should be used in making the holes round and accurate in size. Table I indicates the accuracy needed. For instance, a 36 sq. ft. radiator requires a 0.147-in. diameter orifice and a 34 sq. ft. radiator requires a 0.143-in. orifice. Thus an error of four thousandths of an inch would be equivalent to changing the size of the radiator by 2 sq. ft.

The orifice plates just discussed are easy to install. It is necessary merely to break the radiator valve union, slip in the stamping, and tighten the union again. In some cases it is necessary to change the size of some of the orifices after they have been installed because of radiators which overheat or underheat. If some of the rooms are to be heated to a higher or lower temperature than the rest of the building, the proper thing to do is to size the radiators accordingly. However, the desired conditions can be approached by using larger orifices in the rooms where a higher temperature is wanted and smaller orifices in rooms where a lower than average temperature is desired. The gasket-type orifice plate can be changed very easily by breaking the union and slipping the old plate out and the new one in. One large building reports the cost of labor for installing orifices as 10 cents per radiator.

If orifice plates are being installed in a new heating system it is well not to install them until the system has been thoroughly cleaned of scale and dirt and has been in operation for a time. This should greatly decrease the possibility of an accumulation of scale or dirt blocking the holes.

It has been suggested that the cutting action of the steam might enlarge the orifices if as thin a plate as recommended were used. One such installation has been in service for three years, however, and no wear can be detected so it is not expected that there will be difficulty with other installations.

The orifice sizes given in Table I are such that with a gravity system or with atmospheric pressure in the radiators, the radiators will be just kept full of steam if the pressure in the mains is 6 in. of mercury or about 3 lb. per sq. in. If the pressure is reduced below 3 lb., steam will not flow into the radiators fast enough to keep them filled, and as the pressure is reduced the amount of steam in the radiators is of course decreased, thus making it possible to regulate the amount of heat given off to suit any kind of weather. Table II gives the pressures to carry in the steam mains for different outdoor

temperatures when there is atmospheric pressure in the radiators.

Some people prefer to use larger orifices. The pressure required to fill the radiators is then less than 3 lb. The disadvantage of using larger orifices is that the range of steam pressures available for control is decreased. Instead of having a range from 0 lb. to 3 lb. per sq. in. for controlling the system for outside temperatures from 70 deg Fahr. to 0, we are limited to a 2 lb. range or a 1 lb. range depending upon how large the orifices are made. Thus control of the system is made more difficult. The greater the range of pressures available, the greater will be the ease of control. On the other hand, the pressure drop through the orifices must not be large enough to cause excessive noise. A pressure drop of about 3 lb. per sq. in. was selected as a compromise between the two conditions.

Table I

Sizes of Radiator Orifices in Thin Plates

Size of Radiator Sq. Ft.	Orifice Diameter In.	Size of Radiator Sq. Ft.	Orifice Diameter In.
10	0.075	48	0.171
12	0.083	50	0.175
14	0 090	52	0.179
16	0.097	54	0.182
18	0.103	56	0 185
20	0.109	58	0.188
22	0.114	60	0.191
24	0.119	62	0.194
26	0.124	64	0.197
28	0.129	66	0.200
30	0.134	68	0.203
32	0.139	70	0.206
34	0.143	75	0.214
36	0.147	80	0.222
38	0.151	85	0.229
40	0.155	90	0.236
42	0.159	95	0.243
44	0.163	100	0.250
46	0.167		

Another disadvantage of using large orifices and thus a small pressure drop through them is that the flow of steam into radiators in different parts of the system is likely to be unequal unless the orifices are carefully sized to compensate for pressure drop in the piping. It is desirable to use small orifices and thus a high pressure drop through them so that the pressure drop through the orifices will be large in proportion to the pressure drop through the piping. Small differences in pressure in the steam mains in different parts of the system due to pressure drop in the piping will then not cause as much variation in flow through the orifices as if larger orifices were used. If the pressure drop in the mains is unusually high it might be well to use somewhat larger orifices than given in Table I in the radiators at the ends of the mains. For example, if the pressure drop to the farthest radiator is 1.5 in. of mercury and if it is a 36 sq. ft. radiator, the orifice should have a diameter of 0.159 in. instead of 0.147 in. as given in Table I. This is arrived at as follows: If the pressure drop through the mains is 1.5 in. of mercury and the pressure at the control valve is 6 in. of mercury, the pressure in the main at the last radiator will be 4.5 in. of mercury. Referring to Table II we note that this will let enough steam through the orifice to take care of 10 deg. Fahr. weather which is 10/70 or 1/7 less than the amount needed in zero weather for which the control valve is set. The radiator size, which reduced by 1/7 becomes 36 sq. ft., is 42 sq. ft. Referring to Table I we note that a 42 sq. ft. radiator needs a 0.159-in. diameter orifice. If we then put the 0.159-in. orifice in the inlet to the 36 sq. ft. radiator, the flow through it when the pressure at that point is 4.5 in. of mercury will be the same as through a 0.147-in. orifice in a 36 sq. ft. radiator located near the control valve where the pressure is 6 in. of mercury. In the same way the proper orifice sizes for other pressure drops and other sizes of radiators can be worked out.

The steam pressure can be controlled by adjusting a pressure-reducing valve or by throttling a valve in the steam main. Both methods have been used successfully. In either case the pressure should be adjusted accurately. If the returns are well vented to the atmosphere so that atmospheric pressure is carried in the radiators, the steam pressures given in Table II should be used. If, however, there is a vacuum in the return and radiators, the steam pressure should be adjusted so that the difference between the pressure and the vacuum or the pressure drop through the orifices equals the pressure in Table II, as it is the pressure drop rather than the steam pressure alone which determines the flow. As a guide in setting the pressure it is better to use a mercury U-tube than a pressure gage, and in some cases where extreme accuracy is desired it is well to use a water column. The more accurately the pressure is controlled, the better will be the control of temperature in the building. Orifice systems should not be installed in buildings unless there is someone available who can observe the pressure from time to time and readjust the valves when necessary. It is a waste of time and money to install orifices unless the heating system is to be carefully operated afterwards.

Another method of control applicable only to vacuum systems is to control the vacuum in the return system and keep the steam pressure constant. The pressure reducing valve can be set for, say, atmospheric pressure.

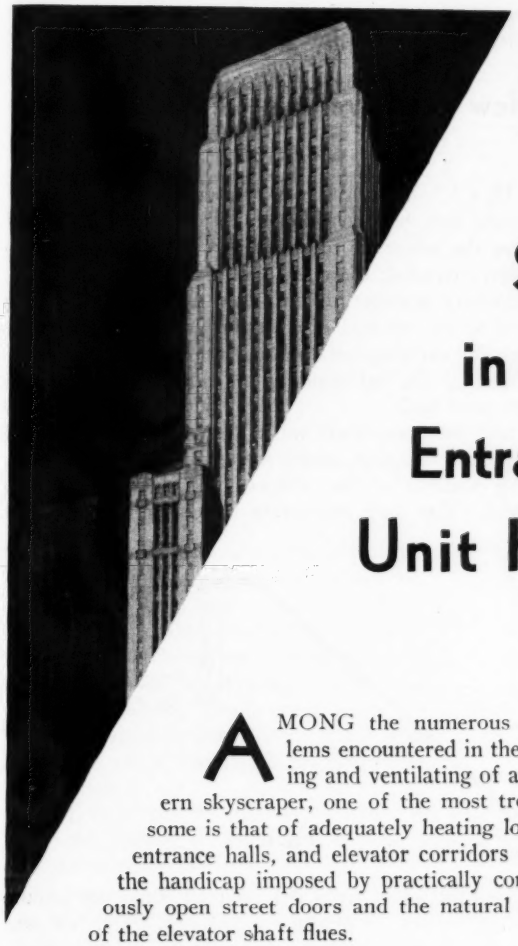
Table II

Required Steam for Different Outdoor Temperatures

Outdoor Temperature, F	Steam Pressure, In. Mercury	Steam Pressure, Lb. per Sq. In.
0	6	2 lb., 15 oz.
10	4.5	2 lb., 3 oz.
20	3.2	1 lb., 9 oz.
30	2.1	1 lb., 0 oz.
40	1.2	0 lb., 9 oz.
50	0.5	0 lb., 4 oz.
60	0.1	0 lb., 1 oz.

For zero weather the vacuum would be adjusted for approximately 6 in. of mercury, thus giving a 6-in. pressure drop, and for milder weather a lower vacuum would be carried. The required pressure drop through the orifices for different outside temperatures would be somewhat greater than given in Table II which is for atmospheric pressure in the radiators because reducing the steam pressure reduces the flow through an orifice for a given pressure drop. If this method of control is used, the proper vacuum to carry in the returns for different outside temperatures could be established by experience. It is possible that in zero weather the steam pressure would have to be increased.

(Continued on Page 124)



Save Space in Skyscraper Entrance With Unit Heaters

AMONG the numerous problems encountered in the heating and ventilating of a modern skyscraper, one of the most troublesome is that of adequately heating lobbies, entrance halls, and elevator corridors under the handicap imposed by practically continuously open street doors and the natural drain of the elevator shaft flues.

Unit Heaters Over Revolving Door

In the case of one particular New York skyscraper, the accompanying drawings show what happened.

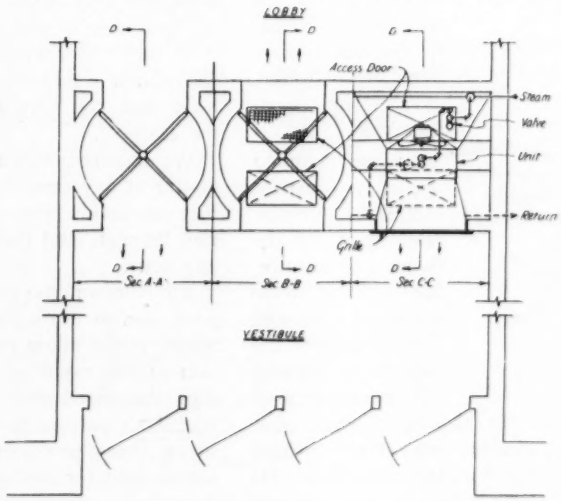
The unit heaters used in this installation are fitted with two-speed motors (870 and 1,170 r.p.m.), and are capable of delivering 140,000 and 163,000 Btu.'s at these speeds, respectively, to air entering at 60 deg. Fahr., and at free delivery. The arrangement used decreased their efficiency slightly. Tests were made at both speeds and it was found that the slow speed gave better results in this particular case.

Control

It was decided to arrange the installation for manual control of the motors, and to use as the controlling factor of the temperature, that of the inlet air. The thermostatic element of the control valve is placed directly in the path of the incoming air. The action of the thermostats is so adjusted as to admit steam when air enters the outside units at 60 deg. Fahr. or below, and at 65 deg. Fahr. or less in the case of the center unit, which has the function of maintaining that temperature in the elevator lobby.

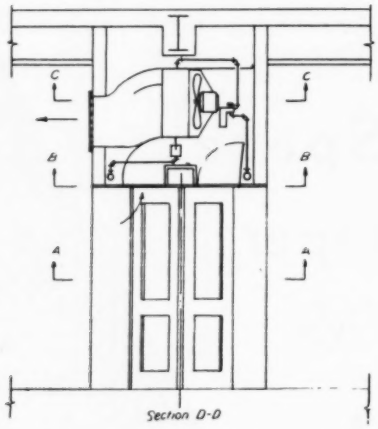
The action of the other units is to build up, in the vestibule, the "outer guard" of the whole heating system. The capacities of the units, which might appear, casually, to be very liberal, are very close to the total demand when the total estimated maximum daily traffic of 70,000 persons is reached. (There are two entrances.)

The inlet grilles and



The installation of unit heaters solved this building entrance heating problem

access doors are made a part of the revolving door construction. The installation, as a whole, represents economy, capacity, flexibility, and simplicity, utilizes room ordinarily wasted, and occupies no floor space. In discussing the installation, the designer refers, with pardonable pride, to his great moral victory—permission to install on the wall of a side corridor the three toggle switches to operate the motors.



Sectional view of the unit heater installation

Novel Use of Thawing Steamer for Clearing Clogged Waste Pipe

WE HAVE known for years of the use of a thawing steamer for thawing frozen water pipes, but only recently have we known of the use of the same device for clearing out clogged waste pipes. Such a steamer is shown at the top in Fig. 1. It is nothing more nor less than a small copper reservoir of just the right size to set into the hood of a plumber's firepot, as seen in the illustration.

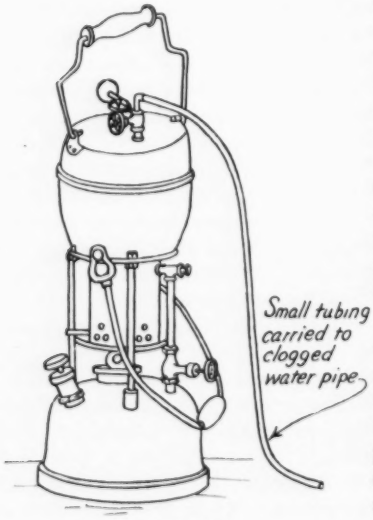


Fig. 1

In the common use of the steamer, steam is generated in it by the flame of the firepot, and this steam conveyed through a small tube to the pipe to be thawed. The device is used in exactly the same manner for clearing a waste pipe, so we have been told by a plumber who claims to have used it most successfully for this latter purpose. He states that introduction of steam in this manner will quickly break up a collection of grease that has filled a waste or drain pipe full.

How An Overflow Cesspool Was Drained

THE CESSPOOL is not so much in evidence as it once was, but nevertheless in country districts and on the edges of towns where public sewers have not been extended, there are still many of them in use.

A country plumber recently told us of an interesting method he has been able to employ in two different instances for carrying off the contents of a cesspool that had filled up the surrounding soil and then overflowed the cesspool itself.

In both instances there was a steep incline into a field close by the cesspool, which made it possible to siphon off the contents of the cesspool and discharge it into the field. The only precaution necessary was to know that the foul waste from the cesspool could not pollute a running stream or produce a nuisance. The feat was accomplished in the manner shown in the illustration.

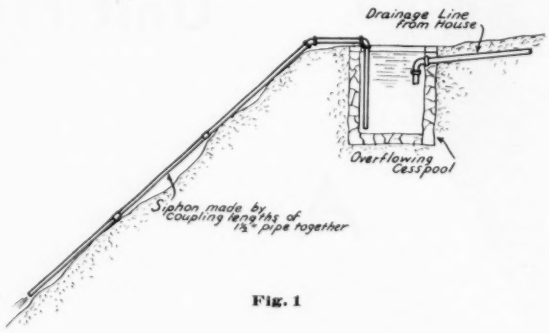


Fig. 1

Three or four lengths of 1½-in. pipe were coupled together, with additional pipe at the upper end dipping down to the bottom of the cesspool. See Fig. 1, above.

The siphon was then filled with water by forcing water from a garden hose into the lower end of the pipe. When the pipe had been filled, immediately the hose was withdrawn the siphon started to operate and continued until the cesspool had been drained to the level of the bottom of the pipe dipping into it.

In order to operate at all, the long or outlet leg of the siphon would have to be carried down to a lower level than the bottom of the pipe which dipped into the cesspool.

We inquired whether the siphon clogged with heavy matter at any time during the operation, and were told that the action was so strong that everything was carried through, and there was no tendency to stoppage at any time.

To overcome the possibility of clogging, it would be a good idea to use a plugged cross in place of the elbow, which would allow rodding the pipe from either direction in the event of stoppage. We presume that the pipe thus used was vent pipe, and that after it had served its purpose it was washed out. It goes without saying that pipe designed for use as water piping should not be used for any such purpose as that which we have described.

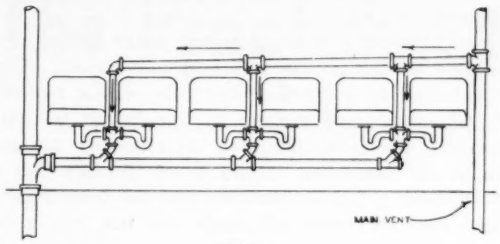


Fig. 1

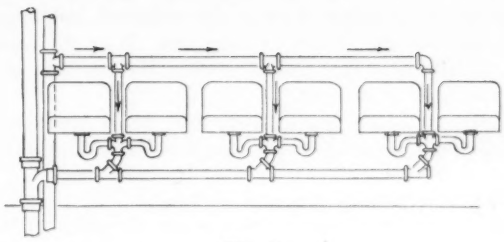


Fig. 2

What Is Circuit Venting

By R. M. STARBUCK

WE RECALL a number of instances in our past experience, where there seemed to be a sense of confusion concerning the principles on which circuit venting depends for its correct functioning. This was brought out very clearly in a letter recently received by the writer from a man of many years' experience in plumbing operations.

The letter ran as follows: "What do you consider the best method of venting a line or battery of five, six, or more lavatories? .

"I prefer circuit venting to any other type of venting for such a line of lavatories or similar fixtures, such as sinks, when they can be connected up as in my sketch, Fig. 1.

"If the line of fixtures was on a loop vent, as in Fig. 2, or on a stack vent as in Fig. 3, would the air circulation be the same on the two end fixtures as on the fixtures near the stack? I think not. Air circulates where it can travel with least hindrance. That is why I am in favor of circuit venting on a line of sinks. Am I right or wrong?"

The entire letter shows that this individual has a confused idea as to what a circuit vent is, and also as to what a loop vent or stack vent is. At the same time, each one of his three sketches, seen in Figs. 1, 2 and 3, illustrates an excellent layout,—each one having connections with which we can find no fault whatever.

All three layouts show continuous venting and not circuit or loop venting. Figs. 1 and 2 show the same job, but with the main vent stack differently located. In one instance the waste and vent stacks are at opposite ends of the line of lavatories, and in the other instance they are at the same end.

This difference in location of the vent stack is undoubtedly what has led to thinking that because the stacks are at opposite ends in Fig. 1, the venting must be circuit venting, and because they are at the same end in Fig. 3, which causes the branch vent to loop over the line of fixtures, the vent is a loop vent. This is all wrong, however, and makes an excellent opportunity to point out the difference between the two types of venting.

In the case of continuous venting, shown in Figs. 1, 2 and 3, air is supplied from the main vent, to each fixture trap, as shown by the arrows. In each instance the vent piping and the waste piping is kept entirely separate.

In circuit venting and in loop venting it is entirely different,—air and waste are carried in the same pipe.

Fig. 4 shows the general idea of circuit venting, and Fig. 5 of loop venting.

In both these cases, as indicated by the arrows, waste occupies the lower part of the pipe, and air, by means of which the several traps are vented, occupies the upper part.

If anything acts to fill the pipe completely with waste, or so fully that air cannot travel efficiently in it, then the pipe fails as a vent. And in our opinion it is easier for a circuit vented or a loop vented line to fail than for the same line to fail if provided with individual vents, as in Figs. 1, 2 and 3.

There is no difference whatever in principle between the circuit vent and the loop vent. Whatever difference there is between them is by virtue of the location of the main vent line into which the circuit or loop vent connects. When the main waste stack and main vent stack are at opposite ends of the line of fixtures, as in Fig. 4, the vent is called a circuit vent. When the two stacks are at the same end, the vent is looped back over the line of fixtures to the main vent, and is then

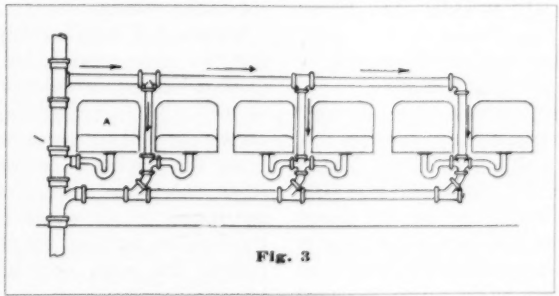


Fig. 3

called a look vent. We hope that we have made clear the difference in principle betwen the ordinary individual trap vent and the circuit or loop vnt. It is the same kind of difference that exists between the one-pipe and two-pipe heating systems.

Circuit and loop venting is much more applied to lines of water closets than to any other fixtures, and the reason is obvious.

When a horizontal soil line serving a line of water closets is not overloaded, there is no difficulty in the passage of air through this soil line, so that each fixture is properly supplied with air. This is especially true when the drainage fitting for each fixture is laid flat, with its branch pointing out from the side. This position of the fitting allows waste to enter the line from the side without forming a film or curtain of water across the bore of the horizontal line whenever a water closet is flushed, which happens when the branch of the fitting points upward.

It will be seen that when circuit or loop venting is applied to such elevated fixtures as sinks and lavatories, it does not have the same chance of success as when applied to water closets.

If the main horizontal line of waste into which the elevated fixtures connect could be of sufficient size the conditions could be made favorable, but large sizes are generally impracticable.

In the case of circuit and loop venting for lavatories and similar fixtures, there is another point also that must be given careful consideration,—the pitch on the main horizontal line must not be so sharp as to send the waste along so fast that it will at some point fill or nearly fill the pipe.

It is for such reasons as these that circuit venting is not more generally applied to elevated fixtures.

There is much difference in plumbing codes in their requirements relative to circuit and loop venting. A large majority of these codes make no mention of the subject, in which event we believe it would generally be acceptable to apply such venting or not, as found desirable. In many other codes this type of venting is mentioned only for water closets, pedestal urinals, trap standard slop sinks and shower stalls. The so-called Hoover code limits use of this type of venting to these particular fixtures.

There is another allusion in the latter quoted at the beginning of this article, which is not correct. Fig. 3 is mentioned as a stack-vented job. As a matter of fact, the only stack venting in this layout is that of fixture A, which is connected directly into the stack. Perhaps the confusion results from the fact that this is a top-floor group of fixtures, and the branch vent is carried into the main soil stack and not into a main vent stack. This, however, would not constitute stack venting.

A definition of stack venting is as follows: A fixture is said to be stack-vented when it is given a continuous vent by connecting it directly into the soil or waste stack, such a connection being permissible only when no fixtures connect into the stack at any point above.

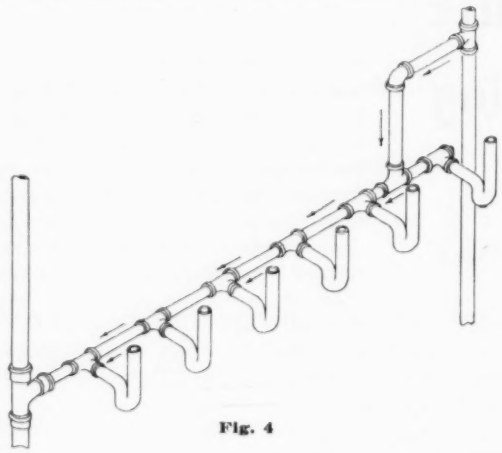


Fig. 4

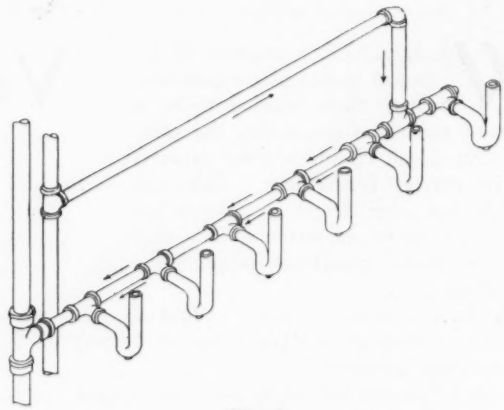


Fig. 5

A single fixture may be stack vented, as fixture A. If a double waste fitting were used, a second fixture, back to back with A, could enter this fitting and both fixtures be stack vented. It is wrong, however, to consider that a line of fixtures can be stack-vented.

Our answer to the question in the first paragraph of the letter on which our article is based is that we could offer no better layout than the two methods shown in Figs. 1 and 2. For a line of lavatories we would consider such connections generally safer than the lay-outs shown in Figs. 3 and 4. We do not mean by this, however, that we are opposed to circuit and loop venting for elevated fixtures, but we do mean that we think it is easier to get safe results from such a line by using continuous vents.

Although it does not apply directly to the chief points that we have tried to bring out, we will take up the question asked in the last paragraph of the letter of inquiry. As we understand it, the question is whether air supply will be the same for the two fixtures farthest from the stack as for the two nearest it. We would think that if the main branch vent were properly sized, the supply of air would be entirely satisfactory for all the fixtures, but that the circulation of air to the fixtures nearest the main vent stack would be most positive, because they are located closest to the air supply.

The Proof that the House Trap Is Unnecessary

By S. M. BARR

THIS article is prompted by an inquiry recently received from one of our readers in Kansas.

It seems that the plumbing fraternity in one of the Kansas cities is endeavoring to eliminate from the local plumbing code the use of the house trap. Inquiry was made asking for a statement of the arguments for and against the use of the house trap.

The reply took sides against the house trap, and with this stand we fully agreed.

In this article we want to bring out the argument which in our opinion makes the use of the house trap unnecessary, and which was not covered in detail in the reply.

All will agree that the installation of this trap and of the fresh air inlet which goes with it always runs up into many dollars in expense. If it can be proved that this expense goes into equipment which is unnecessary or which renders no real practical service, then we maintain that it is a wrong thing to put into a plumbing code a regulation compelling the use of the superfluous equipment. We think we can prove that in general the house trap is installed to render service or protection which has been proved entirely unnecessary.

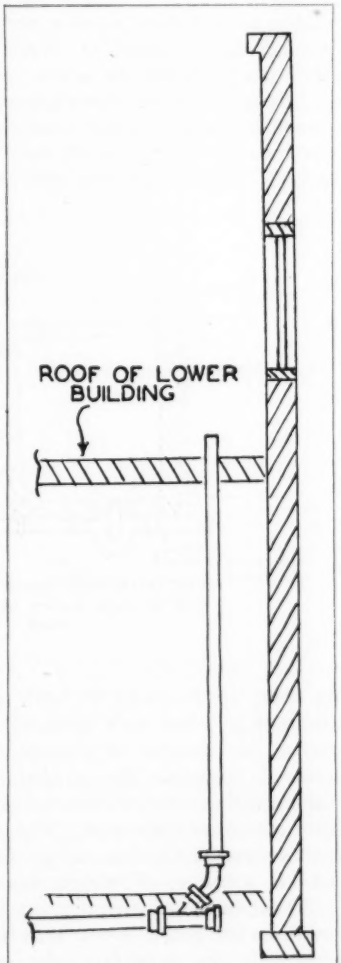


Fig 1—Roof pipe of low building opening below window of higher building

The house trap, main trap or intercepting trap, as it is variously called, is used for one principal purpose—to keep sewer gases and odors from entering and passing through the drainage and vent system. In the past people have been in mortal fear of sewer gas. In recent years, however, science has shown that we have not nearly so much to fear from this cause as previously had been thought. And we are of the opinion that because science has proved this fact, the reason for the house trap and its fresh air inlet has been largely overcome.

So long as intense fear of sewer gas prevailed there was much force to the arguments in favor of the use of the house trap. We are free to say that we were numbered among its friends. As knowledge has increased, necessity for using the trap has gradually been seen to grow less and less, just as in the case of the Kansas town mentioned in the opening of our article.

The friends of the house trap have always had very strong arguments. They have pointed out that although plumbing systems are very generally subjected to thorough tests, there are many ways in which sewer gas and odors might enter the house unless it was protected by a house trap. Setting of foundations and floors may bring about defective joints; imperfect supporting of both horizontal and vertical lines result in settling and sagging, with similar results. It is claimed, in fact, that only a small percentage of plumbing systems in service for a number of years would show all joints perfect under test.

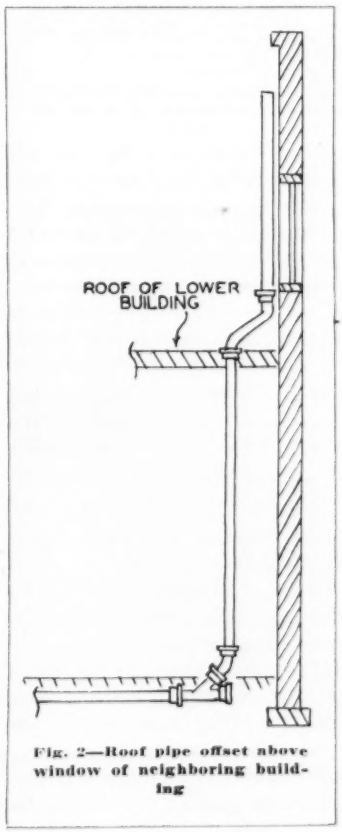


Fig. 2—Roof pipe offset above window of neighboring building

Traps that are not in common use may lose their seals, as also floor drains and cellar drains during periods of drought.

Also while repairs are being made, such as removal of a water closet bowl, sewer gases may enter the interior of the house.

Thus it will be seen that a strong case

can be made concerning the dangers of entrance into houses of sewer gas, and if the situation were as bad as it formerly appeared, there would be reason enough for using the house trap.

The first convincing testimony concerning the actual value and need of the house trap came from a scientific investigation conducted into all phases of the subject by a commission of technical experts appointed for this explicit purpose by the English Government. The report of this investigation was published quite a number of years ago, and it is to be regretted that it is now out of print and, for the present at least, unobtainable.

We are free to say that the reading of this remarkable report marked the turning point for us concerning this particular plumbing practice. From that time we have felt that in many instances, in fact for general use, the house trap and fresh air inlet are an expensive and unnecessary part of of the plumbing system.

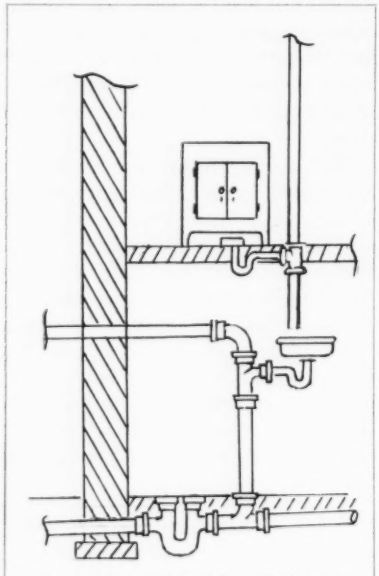


Fig. 3—Wrong practice: Refrigerator line connected to fresh air inlet

We believe this English report had a very great effect on this country's attitude toward the house trap, and we want to show that this was a logical result.

So far as we know, the English investigation produced the first scientific knowledge relating to the house trap that the world ever had. Before that it was all guesswork. Since that time the investigation and experimental work conducted by our own government through the Hoover Plumbing Commission has verified the English results.

In the English investigation, sewer air was studied, and also drain air. Likewise the chemistry and the bacteriology of sewer air and of drain air were studied.

In offering proof to support our stand against the house trap, we want to quote from the English report.

After stating that the commission had heard expert evidence concerning the chemistry of sewer air from several of the most eminent of English chemists, the report continues as follows: "The results obtained by these observers are practically identical, and they indicate that in sewers, whether old or new, ventilated or unventilated, in which sewage is moving, and not lying stagnant, the air differs but little from that of the atmosphere outside."

After pointing out that sulphuretted hydrogen, a dangerous gas, may sometimes be present in sewers, the report states that "this gas would be so enormously diluted by the time it reached the interior of the dwelling that there would be no danger of sulphuretted hydrogen poisoning."

Another point brought out was the following: "The fact that sewer air often has unpleasant odor is true, but it is not generally to be considered dangerous to health. One of the most eminent witnesses gave as his opinion that 'if sewer air presented no smell, it would not do the least harm or cause ill health'."

Under the subject of Bacteriology of Sewer Air, the following facts appear: "The bacteriology of sewer air has been the subject of many investigations, and in one respect the results obtained have been practically uniform, namely in showing that notwithstanding the immense number of microbes in sewage, the number to be found in sewer air is extremely small. Most investigators are also unanimous that the number of microbes to be found in sewer air is usually less than the number to be found at about the same time in the atmosphere outside the sewer.

"Many of these investigators have arrived at the conclusion that microbes found in sewer air are derived not from the sewage at all, but from the air outside the sewer. They also found that the number of microbes

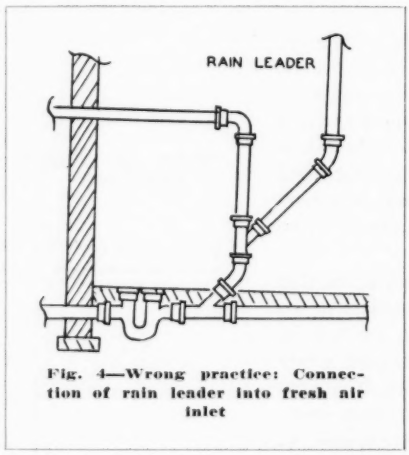


Fig. 4—Wrong practice: Connection of rain leader into fresh air inlet

in sewer air rose and fell with the number of microbes in fresh air; that with increased means of sewer ventilation, the number of microbes in sewer air also increased; and that the number of sewer air microbes diminished as the distance from ventilation openings into the sewer increased. The only exception to these results was obtained in samples of sewer air where more or less splashing of sewage was taking place."

Testimony of scientific investigations showed that even the bacteria in sewer air which may be of intestinal origin do not come from the sewage, but from street dust.

That the number of micro-organisms in sewer air is extremely small, "is established not only in the case of good sewers and those which are well ventilated, but also in the case of bad sewers, even those containing more or less stagnant sewage, with much deposit, and those in which ventilation is small or absent. Indeed, it is in the latter kind of sewer that the number of sewer air microbes would appear to be at a minimum."

In our opinion, one of the valuable features of the English investigation, was the study of not only sewer air, but of drain air as well. From the part of the report devoted to Bacteriology of Drain Air, we quote as follows: "While bacteria of sewage origin are rarely found in sewer air, and when found their number is very small, in drain air, on the other hand, not only are sewage microbes frequently found, but also, when present, their number may be very large.

"Although many sewage microbes may be collected on plates exposed to drain air, the number of such microbes, when quantitatively estimated in relation to measured volumes of the drain air, is very small. Again it is scarcely open to doubt that the bacterial difference between sewer and drain air is accounted for by the splashing which occurs in the passage of sewage in a house drain, especially when falling from a height or passing through a trap. Indeed, since the presence in large numbers of sewage microbes in drain air has been shown to be so directly associated with splashing of sewage in a drain, the presumption is strong that if there were no such splashing, sewage microbes would be as seldom present in drain air as in sewer air. It is also established that the presence of sewage bacteria in drain air, as the result of splashing, lasts only a very short time, and that they subside with great rapidity.

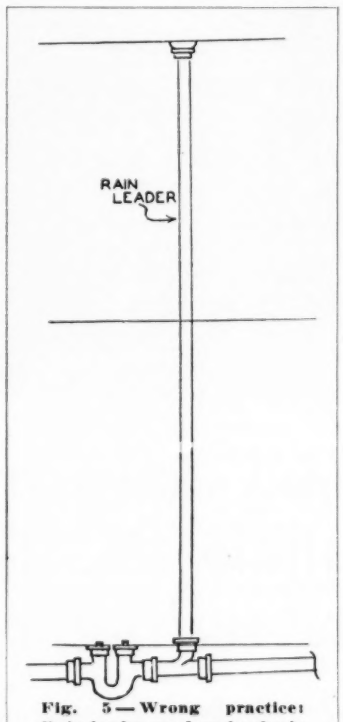


Fig. 5 — Wrong practice: Rain leader used as fresh air inlet

"The practical importance of this essential bacterial difference between sewer air and drain air is very great. One of the dangers feared from the omission of the intercepting trap is that pathogenic microbes, given off from sewage, may be wafted from the air of the sewer into the house drain, and thence into the dwelling itself. It is obvious, however, that if, as appears usually to be the case, micro-organisms of sewage origin are not present in sewer air, there can be no wafting of pathogenic microbes from sewer to drain as has been apprehended. It is likewise obvious that if sewer air contains, as apparently it does contain sometimes, such microbes of sewage origin, but so few in number that their presence can be demonstrated only with difficulty, the chance that they can be wafted into a house drain is very small, while the chance that any of them can pass further and enter the dwelling itself must be still smaller. Consequently, even if, in any particular instance, sewage microbes can gain admission into a house from the air of the drain belonging to it, the possibility that such microbes can include any derived from sewer air, if the intercepting trap is absent, must be very remote.

". . . in the air of London, microbes of sewage origin can very rarely be detected, even after the exposure for many hours, in likely places, of plates coated with media specially designed to demonstrate their existence. It follows, however, that if danger of this kind through drain air is not of importance, the danger that sewage bacteria of sewer air may find access into the interior of a dwelling via the drain, owing to the absence of intercepting trap, must be still more unimportant.

"The entry of sewer air into the dwelling through defects in the drain, may be practically excluded if the house drain is constructed of iron pipes.

"The bacteriological evidence undoubtedly indicates that the bacetrial danger of sewer air is incomparably less than the bacterial danger of drain air, and that therefore,

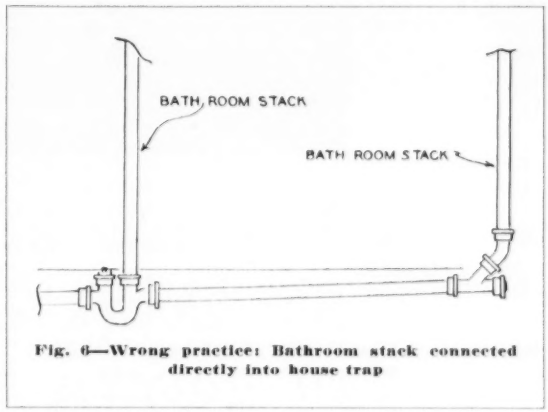


Fig. 6—Wrong practice: Bathroom stack connected directly into house trap

the entry of sewer air into a house is of correspondingly smaller importance bacterially, than the entrance of drain air." Concerning this last statement, it should be noted that the more dangerous drain air is present in the plumbing system whether an intercepting trap is or is not used, so that use of the trap is not a protection against the more dangerous drain air.

"Human beings deliberately exposed to the effects of sewer air do not appear to be affected in health."

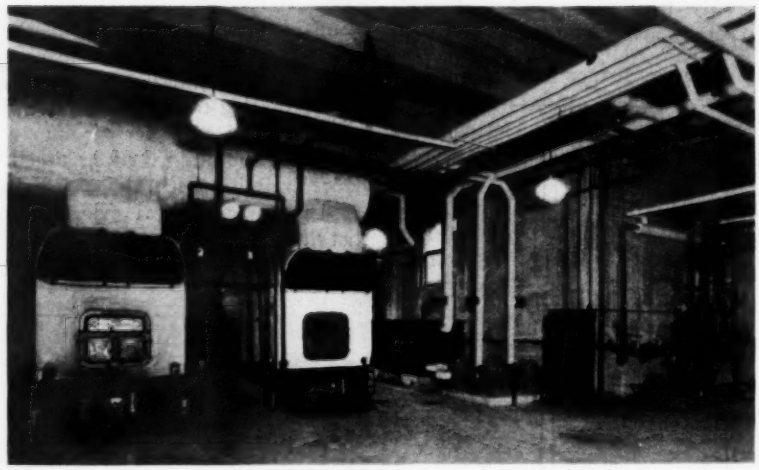
All of the foregoing testimony is convincing. It proves that while people have been in fear always of what sewer air and gases and drain air can do to them, there is in reality practically nothing to fear. That being so, why install main traps and fresh air inlets? To us the proof of their uselessness under general conditions is positive.

The facts already given concern the chemical and bacterial phases of the subject. In addition the English report went extensively into the physical phases also. Numerous experiments proved that a large percentage of solids was retained by the trap after each flush, percentages running from 40 per cent to 70 per cent. This means that the trap tends to promote decomposition of sewage even before it can reach the sewer.

Under the commission's direction, about 6,500 inter-

(Continued on Page 126)

PLUMBING & HEATING MERCHANDISING



Before this job was secured, exhaustive tests were run with remarkable success

Ten rules as laid down by Shaddock's, Buffalo, N. Y., to govern the selling of

Oil Burners for Industry

and explained in detail by H. W. Rente to
JOHN WINTERS FLEMING

WITHOUT preliminary comment, we plunge into the ten rules for successful commercial and industrial oil burner merchandising as preached, practiced and proved by H. W. Rente, manager of the oil burner department, Shaddock's, Buffalo, N. Y.

1. Always contact as constantly as possible all potential prospects and all possible sources of jobs.

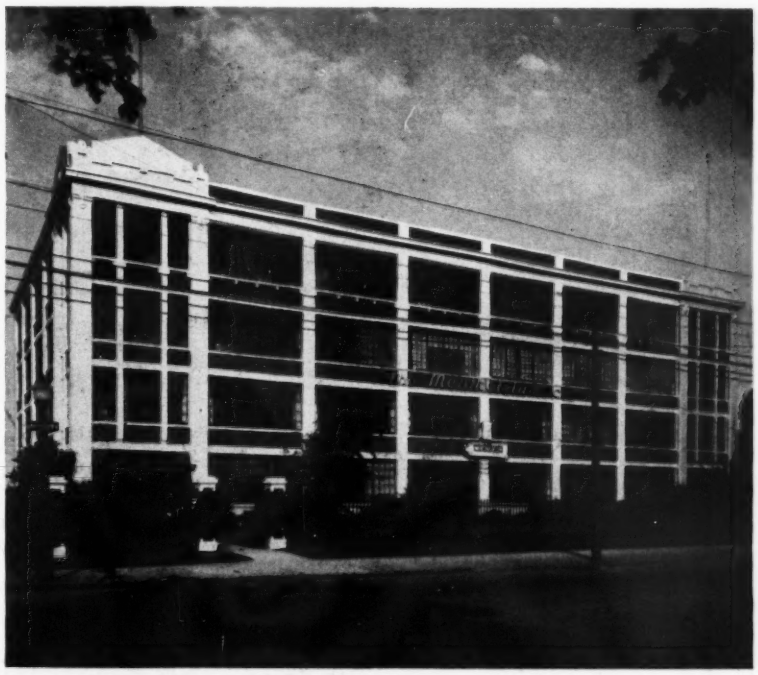
"We locate oil burner prospects, through the regular channels: architects, builders, contractors, engineers, etc. We keep in almost daily contact with these regular channels. Once a year we send them all our annual catalog listing the oil burner equipment we handle, along with all the very latest oil burner data, facts and figures, comparative cost charts, fuel efficiency, space saving, and the like. With this annual catalog we include manufacturers' bulletins, catalogs and descriptive literature. And we always feature photographs of our own most recent oil burner installations.

"This almost daily contact with the regular channels through which jobs flow enables us to keep abreast constantly with all trade activities and at the same time keeps these channels regularly informed as to our existence."

2. Always be on the look-out for new applications of oil burners the world around and then try to get all data, facts, figures and photos on new applications with a view to applying them locally.

"We heard that a branch factory of a large national lead company was using oil burners under melting pots used to produce alloys. We immediately contacted the local branch factory of the same firm. We haven't sold them yet because of the initial cost of oil burners,

Good engineering saved the oil burner job in the plant of the Mentholatum Co.



and because our fuel competition is with coke. But we have a talking point: in producing heat for making alloys, great care must be exercised to see that the fire doesn't become so hot as to oxidize metals. By using oil burners this fire can be kept constantly at exactly the desired temperature with a minimum of employed labor and labor's effort.

"We heard of a linseed oil company using oil burners in process of mixing product ingredients. We immediately contacted a local linseed oil plant. Although we found them already using oil burners they were using them most inefficiently and our suggestions for increasing efficiency may land us a nice job.

"They are using oil burners under retorts. We're trying to sell them on the idea of using oil burners under a furnace of our own design, a furnace that will enable the hot gases to travel a full circuit around the kettle. In other words, we're trying to convince them of the wisdom and practicability of increasing fire travel under the kettle.

"By virtue of the Shredded Wheat company's most successful use of oil burners of the same make we handle and by virtue of our intimate knowledge of the economies effected through the use of these oil burners, every time we hear of a bakery using a wheel-type oven we immediately contact that bakery."

3. Always contact as constantly as possible and in as friendly and helpful manner as possible all competing heating engineers and contractors.

"We maintain our oil burner department distinctly separate and apart from the rest of our company. To competing heating engineers and contractors we give the same price, always, that we give to our own heating department. Because of this practice we often locate and land prospects through competing heating contractors and engineers."

4. Always try first to figure oil burners; failing that, try to insert oil burners; failing that, at least try to place oil burners as an alternative in each and every heating job in your territory.

"We either present personally, or mail with an accompanying letter, a sample of oil burner specifications to each and every architect, builder, contractor, engineer working on each and every job we hear of whether this job be present or future, actual or potential."

5. Always in merchandising oil burners commercially and industrially stress economy, Economy, ECONOMY!

"We stress the commercial and industrial economy of oil burners in terms of performance rather than price.

"First and foremost, always, we point out labor elimination as the major economy made possible by oil burners.

"Second, we stress what I choose to phrase 'finesse of control,' by which I mean the ability to have at hand always and instantaneously available exactly the amount of heat desired and a heat that is burning with maximum fuel efficiency, minimum of fueling effort, and steady, unwavering, uniformity of temperature control.

"In process work where a constant uniform temperature is required we stress this 'finesse of control' as a major economy from the standpoint alone of decreasing product spoilage.

"Third, we point out oil burner economies as reflected in lower cleaning bills—paint bills, window washing bills, interior and exterior wall cleaning bills, daily plant clean-up bills, etc.—greater cleanliness and considerable space savings by elimination of coal and coke pits and bins.

"Fourth, we stress many miscellaneous economy factors: Oil does not deteriorate in storage. Neither does oil corrode storage vessels. No all-night fire maintenance necessary with oil burners because of ease and speed with which morning fires can be built."

6. Always say "I believe"—never say "I guarantee" — and never make a written guarantee when talking oil burners.

"Improper handling will ruin the best product on earth, including oil burners. We installed two church jobs that tell their own tale: One church had as a janitor an experienced seaman with engineer's papers. The other church had an inexperienced fireman, a man utterly ignorant of furnace fueling and boiler tending. What would have happened if we had made the same guarantees on each job? And, a written guarantee may be, often

This is the installation Shaddock engineered for the Mentholatum Co., to give perfect satisfaction

is held for twenty years and then flashed in the guarantor's face!"

7. Always approach and handle each oil burner installation as a peculiar case all its own—just like a doctor.

"Along with improper handling two other factors can and do ruin the finest products on earth: misapplication and faulty installation. First we diagnose each case. Then we prescribe for each case. Lastly we see to it that our prescriptions are taken exactly as directed."

8. Always have every installation and every piece of equipment in the installation passed upon and approved by the local board of fire underwriters.

"It won't hurt your reputation and it will protect all parties concerned in the project."

9. Always employ sales-engineers; never "just salesmen only."

"If you can get him when you want and need him most, which most usually you can't, a good oil burner sales-engineer is worth fifty dollars a week salary plus commission. 'Just salesmen only' are ruinous at any price. They killed the domestic oil burner business here in Buffalo. They almost killed the commercial and industrial trade as well. The high-pressure from house-to-house, office-to-office, factory-to-factory, salesmen peddled oil burners like vacuum cleaners. They made blue-sky promises and guarantees that no product could live up to."

10. Always insist both on specifying and installing each and every oil burner you sell; never sell oil burners "over the counter."

"We got into the oil burner business by doctoring sick installations. Running down at random a list of but fifteen major installations reveals that on eight of these jobs our first contact came when we were called in to doctor sick burners! In every case but one we found one of two faults—or both: two or more domestic oil burners being burned in series under one commercial boiler, or leakage in oil pipe lines."

Meeting Present Day Needs

The foregoing is the commercial and industrial oil burner merchandising platform as preached, practiced and proved by H. W. Rente, manager of the oil burner department, Shaddock's, Buffalo, N. Y. Commenting on the present status of the oil burner business and commenting further on his platform, Mr. Rente says:

"With economy the order of the day and with the consequent demand for reduced operating costs throughout business and industry, this should be a well-nigh ideal time to sell oil burners, for if oil burners will do naught else they will effect tremendous savings in operating costs.

"The oil burner merchandising policies that we preach—and practice—may seem altogether too rigid and strict and conscientious, even for our own good. But the proof of the pudding's in the tasting. Fully fifty per cent, maybe more, of every one of our commercial and industrial oil burner installations have been the direct outgrowths of misapplication of oil burners, faulty installation of oil burners, or improper care and handling of oil burners installed by other firms.

"Why were we called in on the repair jobs? Why does a business house or industry turn to us when in oil burner trouble? Why didn't they go back to the firm that installed the oil burner originally? For one of two reasons, or both:

"Either the company that sold and installed the oil burners originally was no longer in business. Or, by virtue of our reputation, they came to us. That's why we absolutely refuse always to sell oil burners 'over the counter.' And that's why we absolutely insist always both upon specifying and installing each and every oil burner we sell."

So much for policies, platforms and preachments. Let's get right down to cases, literally. Let's glance into Manager Rente's "case book" and read the history of a few major installations:

Mr. Rente Describes Some Installations

"Canisius College called us in. They were having trouble controlling their oil burners. We found they were using three fully-automatic domestic oil burners for a commercial heating job. Moreover they were using these three burners under one boiler and using them at three different pressures. Consequently, when one burner was in operation, the heat reflected from it carbonized, plugged up, warped and almost fused the noz-

Another nationally-known plant in which there is a Shaddock-engineered oil burner installation

zles of the two idle burners! The three fully-automatic burners had become virtually straight-manual! They always had to have a man attending them!

"Since, from their bitter experience, they insisted on keeping a watchman at the burners, we didn't try to sell them fully-automatic burners. We installed one 60 h. p. semi-automatic burner. One year later we sold them two more 60 h. p. semi-automatic burners!

"The Mentholatum company called us in to doctor ailing oil burners. This company had gone from coal to oil and were seriously thinking of going back again to coal. They were using the burners both for plant heating and process work, to provide heat for melting the ingredients of their product.

"We found three large domestic burners, originally supposed to have been fully-automatic, under one industrial boiler. The burners had become worse than straight-manual. They required hourly attention on the part of a fireman! We installed one semi-automatic 60 h. p. industrial burner and we haven't had a complaint since.

"D'Youville College called us in to treat sick oil burners. We found twenty-seven leaks in the oil pipe lines. We re-piped. We found a faulty combustion chamber. We rebuilt it. Then we re-installed the burners they had been using. Since then we've sold them two new 45 h. p. semi-automatic oil burners.

"The Wheel Chair Home called us in to remedy oil burner trouble. We found two fully-automatic domestic oil burners under one institutional boiler. As usual the difficulty of control came about when the nozzle of the idle burner became carbonized from the reflected heat of the active burner. We serviced them for a period. Then we recommended, sold and installed one 45 h. p. fully-automatic oil burner. They've stayed sold ever since.

"The Meyer Motor Car company called us in to diagnose their oil burner trouble. Our first call revealed a leaky line to the oil tank. Then they called us in again on a fuel consumption complaint. We rebuilt the combustion chamber. Later we sold them two 33 h. p. semi-automatic burners.

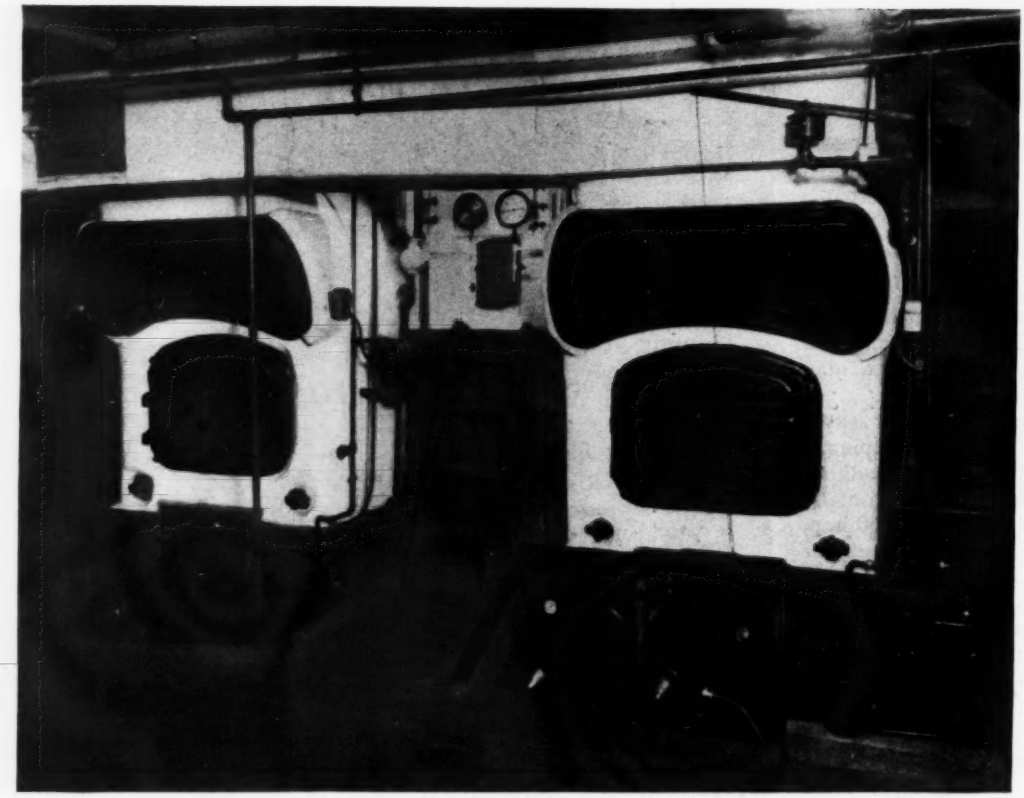
"Hutt's Dairy, the oldest dairy in Buffalo, established 1865, called us in. Their oil pump and the oil burner weren't functioning properly. We found they were using crankcase oil! We pointed out their error, replaced their old burner with one 24 h. p. semi-automatic, and replaced their old pumping equipment with new dual pumps. Ever since they've experienced no difficulty in holding their raw milk exactly at 145 degrees for half-hour pasteurization.

Some More Trouble Jobs

"The University of Buffalo Medical School Crematory called us in as 'trouble shooters.' For cremating bodies and body remnants from the city morgue they were using one 60 h. p. and one 24 h. p., both straight-manual, oil burners. They were using one burner for cremation and the other, in an auxiliary combustion chamber, to consume the heavy, odoriferous gases resulting from cremation. And they were having burner trouble. We found their oil pipe layout and pumping set-up most inefficient. We changed the whole hook-up. Then we showed them a further economy: by lightening their crematory loads one burner was found amply sufficient both to cremate bodies and body remnants and to consume the resultant gases.

"St. Girard's Lyceum and Church called us in to administer to sick oil burners. This was one of our oddest jobs: at one and the same time we were treating a sick oil burner installation comprising the same make of equipment that we handle, though not installed by us, and we were also trying to sell them on installing oil burners for the new boiler room of the expanded church! We sold two 33 h. p. fully-automatic burners for the Lyceum and two 60 h. p. fully-automatic burners for the church.

"Originally this pastor had been sold on oil burners rather than on soft coal because of one factor alone: elimination of labor. He had been sold two semi-automatic oil burners to heat the Lyceum and he had been sold these burners with the idea in his mind's eye that he was getting fully-automatic ones. Worse than that, because of improper application, and because of faulty installation, these semi-automatic burners had become almost straight-manual.



Mr. Rente tells about this job in the Ontario Biscuit plant

"The burners had been installed in boilers with altogether too limited a combustion space and then we found leaky piping. We pitted both Lyceum boilers with air guns and made them sufficiently large to accommodate the required fires.

"At the same time, through the architect whom we contact frequently, and who was designing the expansion of the church, we kept plugging oil burners for the expanded church's new heating plant. Finally we sold the church job, when the architect assumed full responsibility for the performance of the oil burners, before we sold our repair job at the Lyceum. Imagine trying to sell a new oil burner installation to a man who has called you in to doctor sick oil burners of your own type and make. Yet that's just what we did, and we sold the new job before we repaired the old.

Repair Job Leads to Sale

"St. Columbus Church, Convent, School and Rectory called us in to figure repairs on their coal heating plant. We found four separate coal heating plants, one for each of the four buildings. Furthermore, we found that these four heating plants required part-time service from two janitors all winter long.

"Instead of figuring repairs we suggested a new central heating plant to comprise two semi-automatic oil burners. We didn't suggest fully-automatic, burners because one janitor was essential anyway, excluding his duties as heating plant engineer.

"We painted the picture of an oil-burning central heating plant in terms of decreased labor and expense and increased efficiency and cleanliness. First of all, of course, we stressed the economy effected by eliminating one of the janitors.

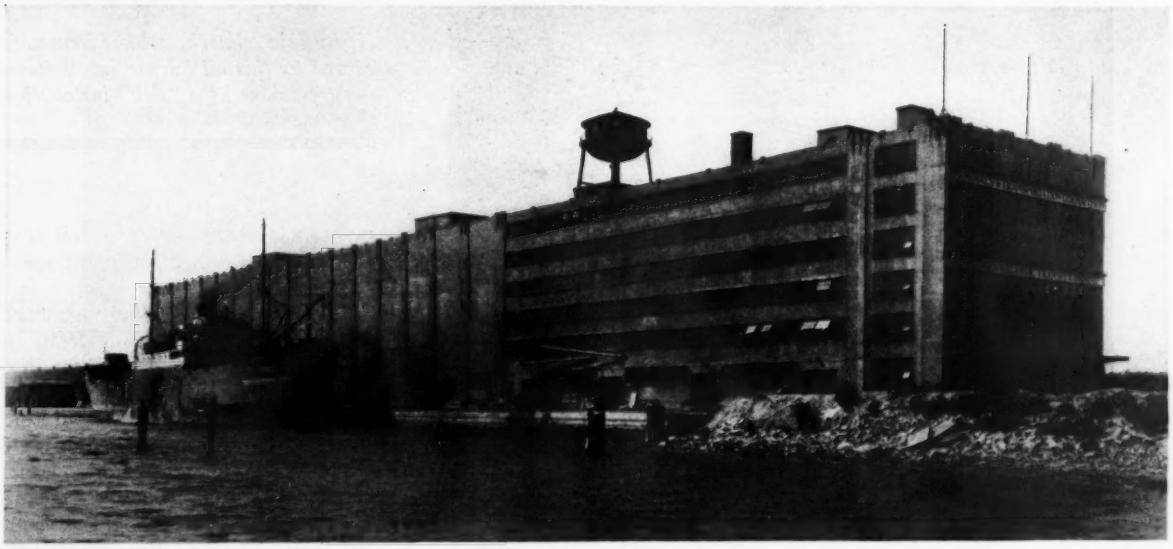
"Then we contrasted two oil burners easily and quickly and uniformly fueling at 75% efficiency of fuel consumption with the labor, dirt, inconvenience, space-using, time-and-money waste of maintaining four separate heating plants.

"We sold them and installed two 45 h. p. semi-automatic oil burners. Today, because of the ease and speed with which heat can be built, the church and school are heated only part-time in the winter.

"The Queen of Peace Church, School and Rectory was in the market for a new heating plant to replace their old coal plant. The specifications called for 'a heating plant' with no reference as to what kind of a heating plant. We sold this job—two 33 h. p. and one 15 h. p., all semi-automatic oil burners—by conducting the pastor on a tour of our installations, and by giving him all our talking points.

"The Ontario Biscuit company was in the process of expanding its bakery. Specifications called for a new boiler room to heat this expansion and to furnish heat for baking. Soft coal was used in the original plant boiler room. Soft coal originally was destined to go into the new boiler room.

"We contacted this job through the engineer employed by the architect designing the expansion. We had regularly contacted this engineer in accordance with our merchandising policy. The engineer recommended oil burners to the architect. The architect recommended inclusion of provision



for oil burners in the specifications.

"The company demanded a 12-hour test run of our equipment—two 75 h. p. and one 45 h. p., all semi-automatic oil burners both for plant heating and baking. We started the test run. At the end of eight hours we compared the weight in pounds of oil burned with the weight in pounds of water evaporated, that is, useful fuel or steam produced. The comparison revealed exactly 79.6% efficiency of fuel combustion. The company called off the remaining four hours of the test run, and awarded the installation to us.

"This company's demands for heat were various and instantaneous. They demanded immediate heat with minimum production effort and maximum flexibility and uniformity of control. We proved these factors for them and went several steps further:

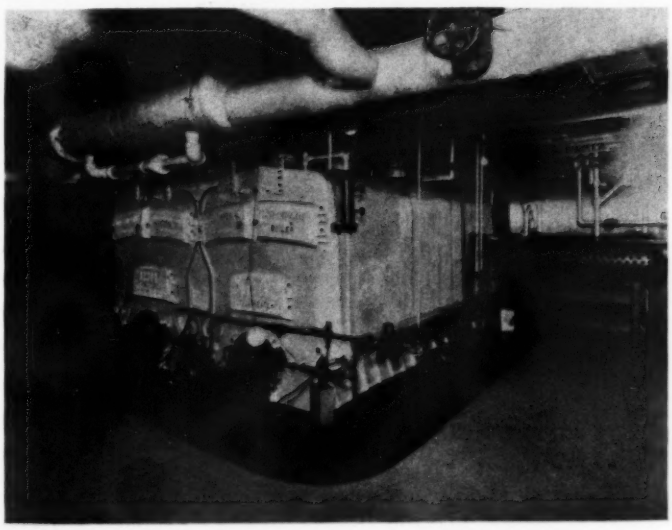
"We sold them on the cleanliness of oil burners, on the elimination of labor, and, in this job, on a highly important item of space saving: the new boiler room was very limited.

Every heating contractor will agree with what is shown here—that is, that an oil burner may suffer criticism unjustly, when installed by those lacking heating experience.

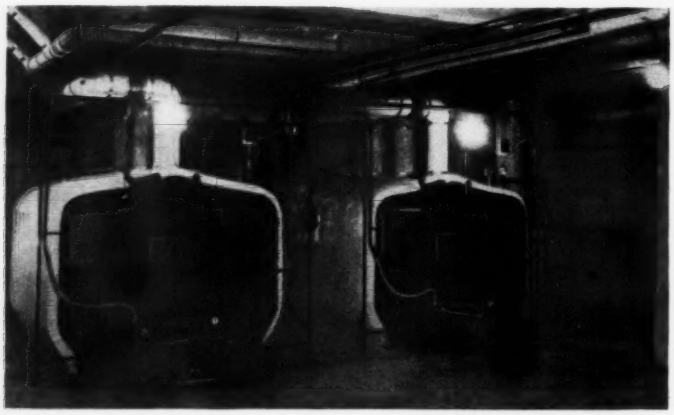
Oil Burners for Linoleum Plant

"The Armstrong Cork Company were in the market for a heating plant to be used in process work; they wanted a heating medium to dry lacquer in the manufacture of felt-base linoleum where the linoleum is lacquered as it travels from roll to roll of stamping presses—like newspapers going through a printing press. But this heating medium had to be unvarying. The lacquer was to be dried but never heated to the ignition point. A perfect application of oil burners.

"We located and contacted this out-of-town prospect through an engineer employed by another company of this city. As part and parcel of our merchandising routine we had contacted this engineer regularly in the past. He recommended oil burners to the Armstrong Cork Company. And we landed the job and installed three 75 h. p. semi-automatic burners.



At the top of this page is the Buffalo Terminal, and at the left is the oil burner installation Shaddock made to take care of the huge areas



A Buffalo church, with lyceum, is served by this oil burner job, following treatment of a "sick" installation

"The Gardiner Manufacturing company were going to move to a new plant. We learned of this through an architect whom we contact regularly. The architect called us in to talk oil burners for plant heating and process work.

"In his old factory Mr. Gardiner employed a fireman daily and a night watchman seven nights of the week all because of the vital necessity of keeping his product in storage at precisely the proper temperature.

"Also, in his process work, Mr. Gardiner sought highly flexible heat that could be maintained with absolute uniformity at greatly different temperatures throughout the different sections of his plant.

"We sold him on two factors: elimination of two men and positive, unfailing control of flexible heat at any and all required temperatures throughout his plant.

"For plant heating and process work, as well as storage-room heating, we installed one 45 h. p. fully-automatic oil burner. In each room of the factory there is a unit heater thermostatically-controlled. The pipe lines leading to each unit heater are equipped with solenoid valves.

"Then we installed a master thermostat in the coldest spot in the whole factory ensemble, the garage. Pressure control is applied to the boiler and is kept constantly at two pounds.

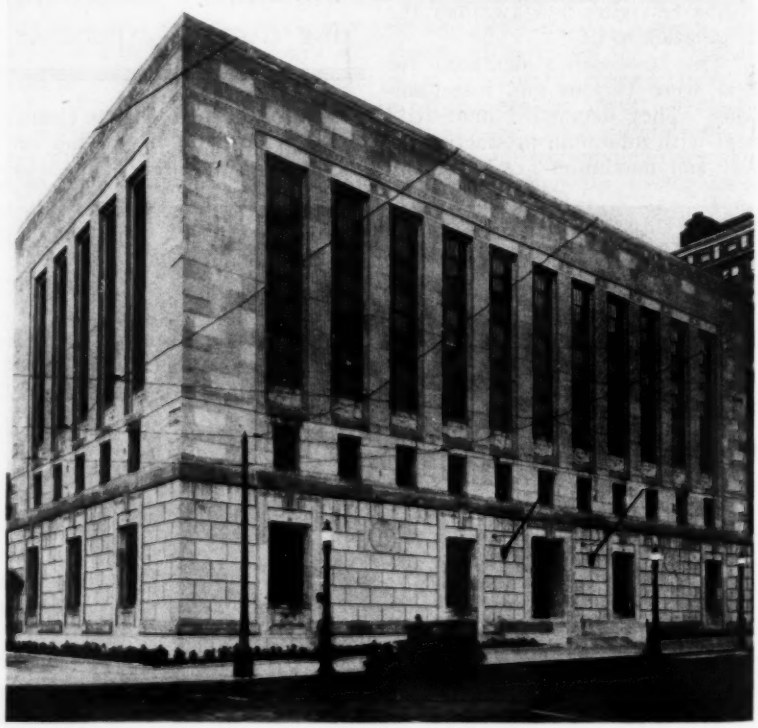
"Thus various temperatures in the various rooms of the factory are steadily maintained by using two-pound boiler pressure control and the unit heaters as operating controls and by using the master thermostat as a limit control.

An Exhaustive Test

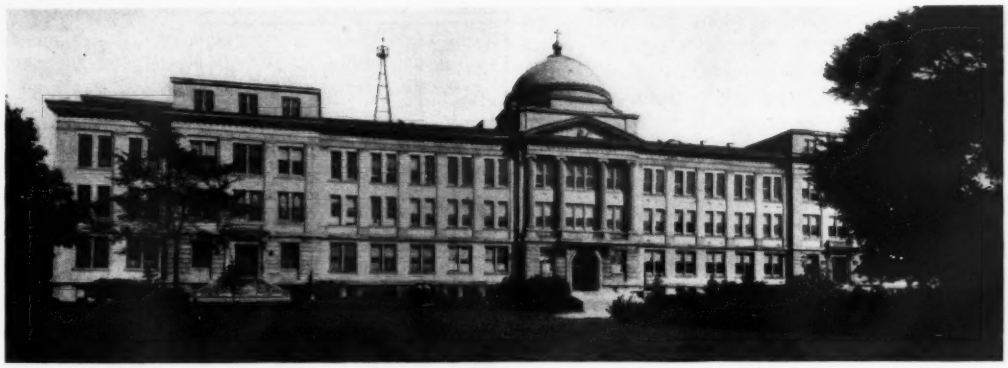
"The new New York State Office building here in Buffalo represents an installation we won on basis of performance in a highly competitive field. As an initial test for fully-automatic oil burning equipment in a state structure, oil was specified in the heating plant specifications.

"A 10,000-gallon oil storage tank with steel-jacketed walls 9/16 of an inch thick was built right into the structure. Also in the installation were a hot water circulating pump for heating coils in the tank, and three oil heaters in the oil suction line, two copper-jacketed coil-type heaters and one sleeve-type. For starting up at the boilers two electric heaters were put in.

"Then we installed two 125 h. p. fully-automatic oil burners using 18 degree Baume oil and capable of using even heavier oil. We ran an exhaustive one-week test: we set the burners to start and stop just as rapidly as the rest of the equipment would cycle; we set the burners to produce throughout the whole building a specific radiation within a specified number of gallons of oil; we put each and every safety feature through each and



The State Office Building, where the Shaddock job was put to tests of the greatest severity—and came out on top



every hypothetical emergency. In other words we put the burners through every possible contingency and they did everything we claimed for them. We won the contract."

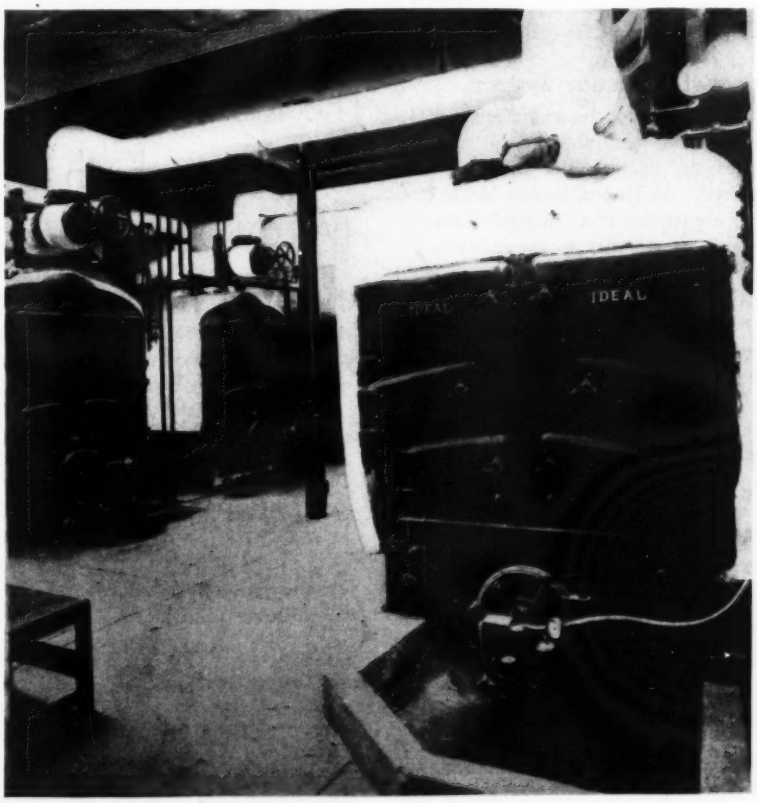
With such a conscientious merchandising and installation platform in practice it might well be expected that sales costs would prove rather high. On the contrary, according to Mr. Rente, sales costs average about ten per cent of total sales values. In depressed days this sales cost will mount to twenty and even twenty-five per cent. But, during busy periods sales costs drop to as low as five per cent.

Canisius College had trouble until the Shaddock organization got on the job

Shaddock's oil burner trade breaks down roughly as follows: 20% domestic, 30% industrial and 50% commercial. For several reasons Shaddock's are not now and will not for a long, long time expend much effort or advertising in attempts to merchandise oil burners domestically. Says Mr. Rente:

"We prefer the commercial and industrial trade for the following reasons: quicker and surer pay; less sales resistance in merchandising because, among other reasons, commercial and industrial oil burners did not quite get such a black-eye in the past; less servicing required after installation because commercial and industrial oil burners are almost always under operating supervision of at least semi-skilled and semi-experienced firemen; and lastly because it costs us no more to sell a $5,000 job than it does to sell a $500 one."

This is the work Shaddock did for Canisius College—to the satisfaction of that institution



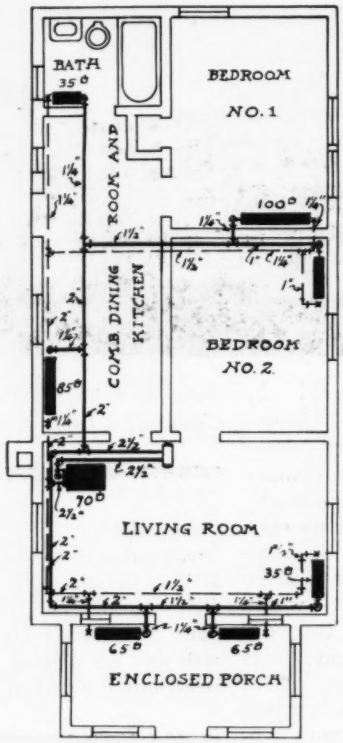


Fig. 6

Heating Residences *and* Small Structures

The fourth of the series in which HAROLD L. ALT reviews heating practices and brings them up to date

Piping for Hot Water Heating System

HAVING sized and located the radiators for the hot water heating system in the bungalow in the previous chapter the subject of piping will be considered. With the heater located in the living room it seems the most logical thing to run a line from the heater across to the radiator on the opposite side of the living room and to pick up the radiators on the enclosed porch on the way. Then, with another line carried back to the bath with a branch over to the two bedroom radiators, the piping is completed as far as the supply is concerned. In this job the supply line was carried on the ceiling, which is a very efficient method provided the appearances are not objectionable. For one thing it permits all of the heat radiating from the pipe to enter the room where it will do useful work and, for another, it eliminates the cost of covering this pipe.

The returns practically parallel the supply pipe except that they are run under the floor and covered. The expansion tank will be placed above the ceiling and all of the supply water will be carried up to the tank, where the mains are air vented, and then the supply main is started off from the tank and pitched down to the drop to the last radiator on the main. This is illustrated in Fig. 6. Now the simplest, and at the same time the most extravagant, method of sizing a hot water heating system main is to take the sum of the areas of all the radiator valves supplied by the main at any particular point and to make the area of the main at this point equal or greater than this sum.

Sizing by Valve Area Method

The standard *tappings and valve sizes for hot water radiators is given in Table III and from this table it will be seen that the size of valve used for the various radiators and the corresponding areas would be as follows:

Branch to Living Room Radiator—

Living Rm. Rad.. 35 sq. ft., 1 -in. valve, 0.86 sq. in.
Porch Rad. ..... 65 sq. ft., 1 ¼ -in. valve, 1.49 sq. in.
Porch Rad. ..... 65 sq. ft., 1 ¼ -in. valve, 1.49 sq. in.

*** By "tappings" is meant the size of bushed outlets customarily supplied with hot water radiators.**

Branch to Bathroom Radiator—

Bathroom Rad. .. 35 sq. ft., 1 -in. valve, 0.86 sq. in.
Bedroom No. 1...100 sq. ft., 1½-in. valve, 2.04 sq. in.
Bedroom No. 2... 55 sq. ft., 1¼-in. valve, 1.49 sq. in.
Din. and Kitch.. 85 sq. ft., 1½-in. valve, 2.04 sq. in.

It now is possible to add these areas as we proceed along the main, showing that the main must have an

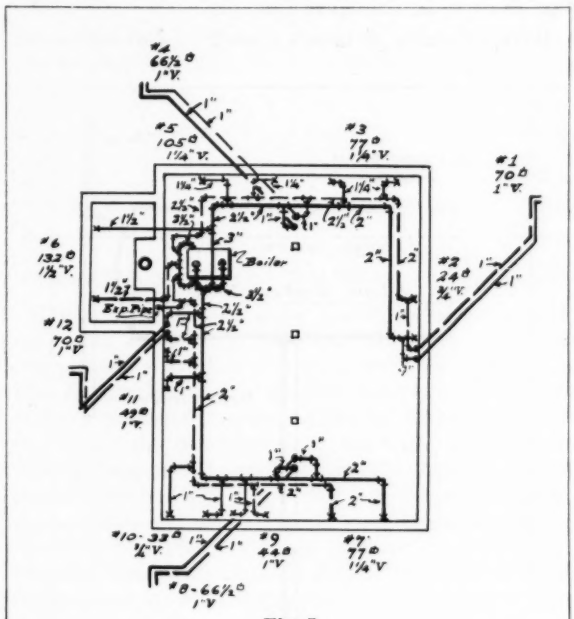


Fig. 7

area at any particular point not less than the sum of all of the valve areas beyond that point. This is done in the following manner:

Radiator	Valve Area	Total Area
Liv. Room	0.86 sq. in	0.86 sq. in.
Porch	1.49 sq. in	2.35 sq. in.
Porch	1.49 sq. in	3.84 sq. in.
Bath	0.86 sq. in	0.86 sq. in.
Bed. No. 1	2.04 sq. in	2.90 sq. in.
Bed. No. 2	1.49 sq. in	4.39 sq. in.
Din. and Kitch	2.04 sq. in	6.43 sq. in.

Table IV gives the internal cross sectional areas of standard weight pipe which will be of considerable aid in determining the pipe size necessary to be used; reference to Table IV shows that the line supplying the living room radiator must be 1-in. size as a 1-in. pipe has a cross sectional area on the inside of 0.86 sq. in. The line to the porch radiator must be 1¼-in. size as this size of pipe has 1.49 sq. in. internal area; the line supplying the living room radiator and on porch radiator is shown to require an area of not less than 2.35 sq. in., and referring to Table IV it will be seen that this should be a 2-in. pipe. The pipe feeding the second porch radiator will be the same size as for the other porch

Table III
Standard Tappings for Hot Water Radiators

Nominal Size of Valve Inches, Diameter	Size of Radiator Square Feet Based on 150 Btu per Sq. Ft.	Area of Pipe in Square Inches
1	0 to 40	0.86
1¼	41 to 72	1.49
1½	Over 72	2.04

Table IV
Internal Areas of Standard Weight Pipe

Nominal Size of Pipe Inches Diameter	Internal Area Sq. In.	Nominal Size of Pipe Inches Diameter	Internal Area Sq. In.
½	0.304	2½	4.79
¾	0.533	3	7.39
1	0.864	4	12.73
1¼	1.49	5	20.00
1½	2.04	6	28.89
2	3.36	8	51.16

radiator which already has been shown to need a 1¼-in. pipe. But the main supplying two porch radiators and the living room radiator must have an area at least of 3.84 sq. in., and Table IV shows this to be just a little over a 2-in. pipe, so it probably would be sufficient to make this 2 in., as the use of the valve area method already has been explained as being rather a generous way to size lines.

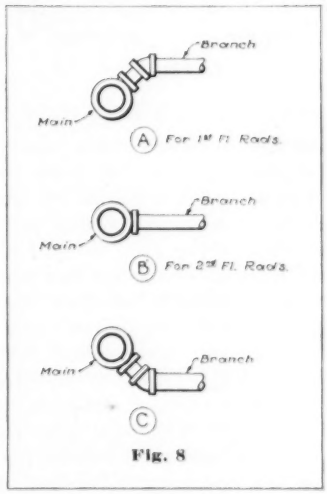


Fig. 8

Now going back to the bathroom radiator it will be seen that this radiator has a valve area of 0.86 sq. in. which means a 1-in. pipe, and the radiator for bedroom No. 1 requires a 1½-in. pipe; bedroom No. 2 takes a 1¼-in. pipe and the branch supplying both bedrooms carries a combined valve area of 2.90 sq. in., which means a 2-in. pipe. The main carrying the two bedrooms and the bath has a combined valve area of 4.39 sq. in., which necessitates a 2½-in. pipe and the main carrying the two bedrooms, the bath and the dining and kitchen radiator has a combined valve area on it of 6.43 sq. in., which is a trifle less than the area of a 3-in. pipe. The sum of the areas on the two main branches is

Branch to Living Rm	3.84 sq. in.
Branch to Bathroom	6.43 sq. in.
Total valve area	10.27 sq. in.

which is just a little over a 3-in. pipe as is seen in Table IV. The return parallels the supply as far as the method of hooking up the radiators is concerned and, consequently, it will require the same sizes. If the return had followed a different manner of connecting up so that the valve areas did not correspond to those computed for the supply main, then the return main would have to be separately calculated in a manner similar to that used for the supply.

Now let us check with the pipe sizes used on the actual job, as indicated in Fig. 6, and it will be found that in

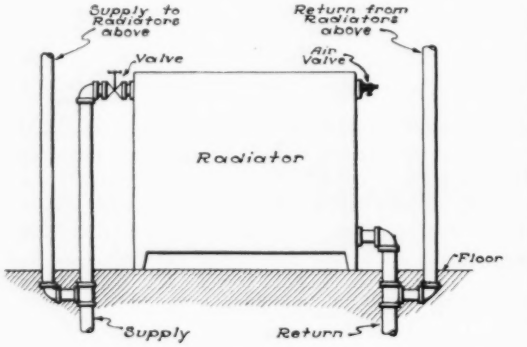


Fig. 9

some cases the sizes computed have been reduced one pipe size. The pipes supplying the living room radiator are 1-in. size and the porch radiators 1¼-in., just as has been computed but the main supplying the living room and one porch radiator has been reduced from 2 in. to 1½ in. and the main supplying the two porch radiators and the living room radiator has been made 2 in., although the calculations showed that this was a trifle over 2 in., as far as valve area is concerned. On the branch to the bathroom we find a 1¼-in. to the bathroom where a 1-in. was indicated as sufficient, and a 1¼-in. is used for bedroom No. 1 where a 1½-in. positively should be used; also a 1-in. has been used for bedroom No. 2 where a 1¼-in. is positively necessary. The line supplying the two bedrooms has been made 1½-in., where a 2-in. is required and the main carrying the two bedrooms and bath has been reduced from 2½ in. to 2 in. The main carrying the rear portion of the house has been reduced from 3 in. to 2 in., and the main from the heater has been cut from 3 in., to 2½ in.

Now this system really does circulate satisfactorily and the proof of the pudding is in the eating; so the lesson we can draw from this installation is that the valve area method will give pipes about one size larger than necessary on the larger lines but will be pretty close to being correct on the small branches to the radiators. It also must be noted that the radiators on the ends of the run, viz., the bath and the living room, have the branch increased one size to favor the circulation at the far ends of the main.

Sizing by Factor Method

It must be remembered that, in sizing pipe for hot water heating systems by the valve area method, the result is that the velocity will be either the same, or somewhat less, in the larger lines than it is in the smaller and that, even with equal velocities, the friction in a large pipe is less than in a small one. For this reason a system of factors is often used these factors being arranged so that the friction remains nearly constant in all lines and in this way oversizing on the larger piping is avoided. In Table V is given a list of factors for various sizes of pipe from ½-in. size up to 8-in. size.

Using this table of factors gives the following:—

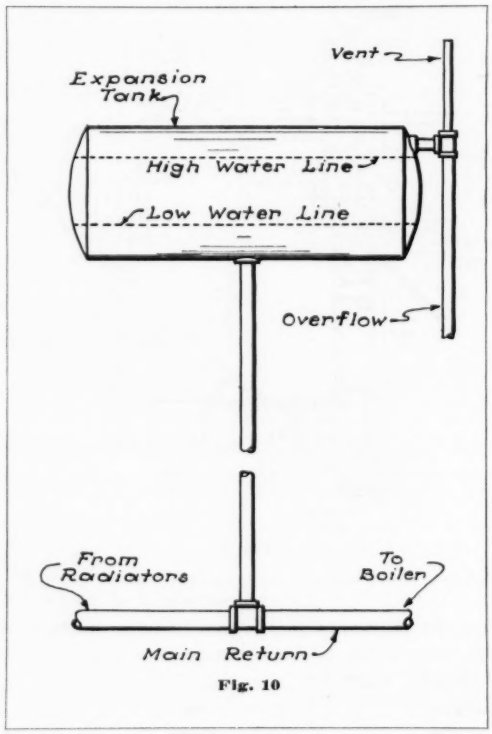


Fig. 10

Radiator	Valve	Factor	Sum of Factors	Pipe Size Required
Living Room	1	10	10	1-inch pipe
Porch	1¼	20	30	1¼-inch
Porch	1¼	20	50	2-inch
Bath	1	10	10	1-inch pipe
Bed No. 1	1½	30	30	1½-inch
Bed No. 2	1¼	20	50	2-inch
Bath and Bedrooms			60	2-inch
Dining and Kitchen	1½	30	90	1½-inch
Rear Portion			90	2½-inch
Sum of both branches			140	2½-inch (plus)

It will be noted that the sizes now check with those used on the job outside of the pipe going over to the bedrooms and the bathroom; it is possible that it was thought that the bedrooms would not be expected to have quite as exacting requirements as the other rooms and that this pipe size was shaved a little on this account. The factor system is so easy to use that it seems strange anyone would go to the valve area method, but there are a great many small jobs that are based on valve areas

and after all there is a greater margin of safety than by using the factor method. Either should result in systems which circulate satisfactorily.

Table V
Gravity Hot Water—Open System
Factors for Use in Determining Sizes of Mains and Branches

Nominal Size of Pipe Inches Diameter	Factor	Nominal Size of Pipe Inches Diameter	Factor
½	2	2½	110
¾	5	3	175
1	10	4	380
1¼	20	5	650
1½	30	6	1050
2	60	8	2250

Open System Gravity Hot Water in Residence

The next step in hot water heating is that of a building having a cellar and more than one story high. For this purpose the cellar plan of a residence is shown in Fig. 7 with the sizes of the first floor and second floor radiator indicated thereon. This is a typical heating sketch and the arrangement of the upper floors means little as long as it is assured that the risers can go up through the building where they are indicated and that the radiators will be acceptable in the locations shown. Assuming that the sizes of the radiators have been computed by one of the methods already explained in detail the question is, what difference in method will be used in sizing and running the main?

The tendency for the water to circulate in a hot water heating installation is due to the expansion of the water as it is heated and it is the difference in the weight of the column of water in the supply, when compared to the weight of the column of water in the return, which unbalances the water in the system and causes the movement called circulation. It is self-evident that the greater the temperature difference between the two columns the more intense will be the circulatory action; also, that the higher the columns become, the greater will be the difference between the weights of the two columns, and this will also produce a greater rapidity of flow. Now the difference in temperature cannot be increased very much without reaching the boiling point of the water, assuming the system is open, because most hot water heating systems are presumed to operate with water leaving the boiler at 180 deg. Fahr. and that the average temperature of the water passing through the radiator is about 175 deg. Fahr. It will be seen that it would require the addition of only a few more degrees to bring the water to boiling point, or 212 deg. Fahr. As far as height is concerned, there really is no limit except the height of the building itself and the pressure that the system will stand. Consequently, when hot water heating is applied to buildings of more than one story, care must be taken to balance the system or—in other words—to artificially increase the friction in the lines which otherwise would rob the less favored radiators by means of the greater height and circulation head.

Table VI
Gravity Hot Water—Open System
Schedule for Riser Sizes for Different Heights Above the Boiler

Height Above Boiler	5 Ft.	15 Ft.	25 Ft.	35 Ft.	45 Ft.	55 Ft.
Corresponding Floor Level	1st	2nd	3rd	4th	5th	6th
Size of Riser and Radiator Valve Inches	Allowable Square Feet of Hot Water Radiation					
¾	40	50	60	70	80	90
1	70	80	90	100	110	120
1¼	110	117	135	147	170	187
1½	180	195	210	230	245	260
2	300	375	450	500	575	650

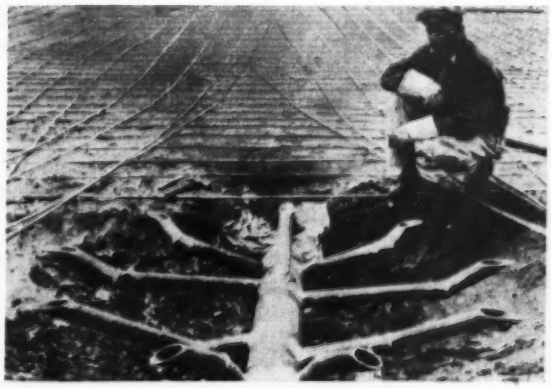
This is accomplished by gradually increasing the amount of radiation on a line of given size depending on the relative heights of the various radiators above the

(Continued on Page 131)

Fabrication of Pipe Specials

AN INTERESTING piece of special pipe welding recently was fabricated by a plumbing contractor for use in a large outdoor swimming pool. The engineer's design called for a constant flow of fresh water into the pool at one end through small separated pipes, in order to insure a more thorough mixing with the fresh water than would be possible with a single large inlet and to eliminate the force of water flow that would result from one large stream of water entering.

A special distributor inlet was fabricated by welding nine angle branches to a section of the inlet main. The outer ends of these branches were miter-cut with the blow pipe so that when installed they would be flush with the concrete bottom of the pool. One end of the main body of the distributor was closed with a welded cap and the other end was welded in position to the inlet.



An interesting sample of pipe welding

RETAIL ADVERTISING SERVICE

SALES in plumbing will center very largely around the number of home contacts the contractor is able to make. That is why the inspection idea is a good one—it will bring calls from homes where the contractor will have an opportunity to make a complete study of the plumbing—to make such sales as will bring it up to date.

Inspect Plumbing Now

WE'LL start with the meter, and give your plumbing system a thorough inspection. That will assure you of untroubled service this winter—we'll catch those small troubles that grow to be big ones, and nip them in the bud. You'll have proper water supply in bathroom, kitchen and laundry, all waste pipes will be free, leaks will be taken care of before they waste water. Let us tune up your plumbing system now. The inspection charge is a small one—very small when balanced against the knowledge you'll have that the sanitary system is in perfect condition. Just telephone.

(In this space Your Name, etc.)

For one-column space

Water Waste Is Costly

It adds, of course, to the water bill. And, once a leak has developed, to permit it to continue is to permit it to grow. Home owners, or owners of apartment buildings, should have plumbing inspected now, before the winter season. It will eliminate annoyances, leaks, forestall heavy repair bills that come from neglect. Phone us. We'll send a competent man to go over the plumbing from meter to waste pipes.

(Use this space for Your Name, Etc.)

A two-column newspaper ad

Dear Sir:

In the interests of economy, we recommend an inspection of your plumbing system now, before winter comes.

Small leaks, even, waste money--and if they are in the hot water supply, they waste fuel. And small leaks tend to grow larger, increasing the waste.

You may have been experiencing some annoyances with your plumbing system--hammering in the pipes, and so on. We'll eliminate them for you.

Family life for the winter months, centers more than ever around the home. Such conveniences as the water system ought to be put in first-class condition to meet the demands upon them.

Hot water supply ought to be considered, to decide if the most economical method of securing an ample quantity of hot water is being used. Wear and tear on the system, due to small defects, ought to be eliminated before they bring large repair bills and replacements.

If you will telephone, we'll send a competent man to go over your plumbing system, starting at the meter. When he makes his report that all is O.K., you can depend upon it. The cost will be slight in comparison with savings and with the new convenience you will experience. Very truly yours,

HARRY BROWN

A plumbing sales letter

The copy on these two pages is for the use of readers of DOMESTIC ENGINEERING—without charge. If you wish to use the illustrations, they are sold at $4.20 for twelve—three months' service.

If you are using any of this copy, send us samples. We like to keep in touch with what our readers are doing.

WINTER WARDROBES —AND THE PLUMBING SYSTEM

"I suppose I do seem to think of things in a curious sort of association," says Harry Brown, local plumbing contractor. "What I mean when I link up winter wardrobes and the plumbing system is this—everybody's going over the winter wardrobe now, getting it in shape for use again.

"Maybe I could sell some folks an overcoat—for the range boiler in which hot water is stored. That would keep the water warm longer—and so save fuel, of course. There are other things that ought to be done now—leaks should be eliminated, and the system generally checked from meter to waste pipes. That will eliminate annoyance and waste—and will certainly yield a profit."

Hand this publicity item to your newspaper

Sell Something More Than Heat

Now's the time to get into the home—however you do it. A good "jimmy" for this purpose is attention to the boiler to flush it out, and to stop leaks. That's what the copy below treats of.

A two-column newspaper ad

What Has Your Boiler In Its "Innards"?

Is there rust? Is there an accumulation of scale—a sludge that drags down its heating efficiency and makes it necessary to fire up more vigorously in order to get enough heat? We have two kinds of magic boiler compounds—one flushes out all the rust and scale, and gives you clean surfaces for efficient performance. The other stops leaks, without taking the boiler down. Phone today. We'll flush out the boiler and take care of the leaks promptly. Phone now.

(Use this space for Your Name, Etc.)

Rust, Scale, Sludge — your boiler's enemies

WHEN you wonder why the room thermostat doesn't register enough heat, ask yourself if your boiler is clean—and without leaks. Let us send a man with those magical boiler compounds we carry. One will flush out all the rust and scale, and sludge, and so increase the efficiency of the boiler. The other will stop the leaks, without taking the boiler apart. If you will phone, we'll have a man out in a jiffy, and in just a little while he'll turn the boiler back to you working as it did when it was new. Phone now.

(In this space Your Name, Etc.)

A single column ad

BOILERS NEED "TONICS," TOO

"And why not?" asks Harry Brown, local heating contractor. "Here's a change of season—boilers have been out of use for a while. Last winter they took in a great quantity of water.

"Maybe the water left rust, or scale—a sludge that makes for poor heating. Since the process is nothing more than giving it a dose of boiler compound, home or apartment owners need not suffer loss of efficiency. And then there's another magical compound that you pour into a boiler. It has what the writers call 'an affinity' for leaks in boilers—it gets to them, and it sticks to them—and then there are no more leaks!"

Give this publicity item to your local newspapers

Your Window

Window displays need change. If you have a permanent display of fixtures and equipment, make changes in lighting—use the free floor space for changed displays of accessories. Property owners who pass your window will never be particularly drawn to it if it remains the same in every detail for months at a time. Change—even small changes—is what draws attention to a window.

Dear Sir:

Whether you own a home, or rental property, or both, you are once more faced with the problems of heating.

This letter proposes two simple methods of dealing with two conditions that tear down efficiency in a boiler. One is rust and scale--the other is leaks.

We have two compounds which take care of such conditions with what is practically no trouble at all. For eliminating the rust and scale that keep a boiler from working at the peak of efficiency, we carry a flushing compound. It works like magic--and a boiler flushed out with it properly is restored to full efficiency in that regard.

The other compound--as simple in its use--is for leaks. It is poured into the boiler, and seeking out such leaks as it circulates, it seals them. Thus another waste is eliminated.

We suggest that you phone us. Every boiler ought to be flushed out before going into a new heating season. And if there are any leaks, it is obvious they should be cared for immediately.

Just telephone.

Very truly yours,
HARRY BROWN

A heating sales letter

Editorials

Times — and the Individual

THOSE who are inclined to be pessimistic can, no doubt, find plenty in the present situation to keep them blue. Yet there are many people in the world who refuse to live in Casey's town of Mudville—men who wouldn't have allowed the mighty Casey's strike-out to affect their civic pride. If you told them that Casey had struck out, they'd point out that some one else played a great game at second.

So it is with a number of men in the plumbing and heating field. They probably know that Germany is having tough political troubles; that England went off the gold standard, that car loadings aren't as big as they might be. Yet they go on their way serenely, doing business at the old stand and, it may be, dropping a dollar or two into the surplus fund now and then.

This isn't intended to be one of Pollyanna's sweet utterances. Men who are doing business profitably just now are working, probably harder than they ever did. But the point is that they aren't permitting the general economic gloom to hobble them. Because, in a country the size of the United States, the fact remains that there are always people who have money to spend. Maybe statistics show that produdtion and sales are off as much as 50% in some lines. Fifty percent of what the country was spending in boom times (some of it, remember, was never actually spent, but became delinquent promises to pay) is still a very large sum that requires a lot of zeros to express its billions.

Under many a gloomy statement lies the fact that here is a man who became accustomed to getting business easily, when there was so much business to be had that any one could get some of it. Not every worker is getting more business than last year, of course; but a fair number are, and others are content to know that in holding their volume at anything like a comparative level with last year, they are getting a greater percentage of the total business to be had in their communities.

The immediate response to the offer of the new series of ten remodeling advertisements in the last issue of DOMESTIC ENGINEERING show that contractors are still interested in anything that will help them to push their businesses along. These are the individuals who refuse to be pushed down to the level of the gloomy average.

Good News

"FOR the fifth consecutive month, resistance to further drops in the volume of sales and collections is revealed, with October presenting almost exact duplicates of the percentages of September in regard to good, fair and slow collection conditions."

With these words, a bulletin of the National Association of Credit Men points to one evidence of the betterment being brought about by the forward march of time. Five months is a good test period and one would naturally expect to learn that, having shown such "resistance to drops in the volume of sales and collections," business would begin to do more than resist, and make some advances.

As a pretty fair example of what can be done by alert, constructive effort, this bulletin says: "New England sends in the most optimistic reports." A part of the increase in sales in New England comes from the fact that shoes and textiles are in demand, because replacements have become necessary. But there has been a concerted move in New England—by an "Economic Council" for that section—to help conditions improve, and there can be no doubt that these "optimistic reports" are partly the result of the resolution in New England that it would not be pushed down to the level of the gloomy average.

Men and groups that are doing nothing, have time to grumble. Men and groups that are doing something constructive don't take the time.

Gas Company Merchandising

IN THIS issue will be found a strong evidence of the kind of leadership which DOMESTIC ENGINEERING has always given the industry. The merchandising activities of utilities have taken from master plumbers a lucrative business—and the utilities themselves have realized that in some ways this has been a short-sighted policy. But, they have the bear by the tail and don't know, perhaps, just how to let go.

The plan outlined in this issue to govern the merchandising activities of utilities, and the conditions of co-operation which would be satisfactory to dealers, is the result of studied care. It is offered as the guide to those groups who have no well formulated program to present to their local utilities. We believe the conditions laid down to be fair to both sides; we believe the principles to be fundamental and worth going after.

The Hoover Code and the Wet Vent

By HARRY S. DAVIDSON

THIS article is prompted by the receipt of a recent letter from "A. G.," California. The letter was in part as follows: "I have been studying various sketches that have appeared in DOMESTIC ENGINEERING, and have not found one that will pass inspection of the state of California. Take for instance, Fig. 1, page 143, in the issue of May 2d, 1931. This sketch was sent in by a plumbing inspector, and according to your opinion is satisfactory.

"On the first floor the water closet has a wet vent. This vent is made wet by the lavatory discharging into it. The bathtub connection would serve as a vent for the water closet but it would also be a wet vent, for the waste from the bathtub enters the closet bend.

"On the second floor the water closet also has a wet vent, as the vent through the bathtub connection cannot serve as a perfect vent for the water closet, because it is a wet vent.

"On the third floor the water closet has a wet vent because the lavatory discharges into the stack above the water closet. The bathtub has no vent, and it is more than 24 in. from the stack.

"I would be pleased to see a drawing based on the Hoover code, published in DOMESTIC ENGINEERING."

The two points of special interest that this communication brings up are the wet vent and the Hoover code, and in a sense the two are closely related.

We reproduce in Fig. 1, the drawing on which "A. G.'s" letter is based.

In Fig. 2 we show a plumbing elevation which agrees with the Hoover code. In this layout will be found various wet vents. These are located in the drawing at points marked A, B, C, D and E. In each case the wet vent is one that would be allowed under the general findings of the Hoover report, on which the Hoover code is based. By this we do not mean that because some particular practice is sponsored by the Hoover code or report that it is therefore necessarily faultless, for there are various prac-

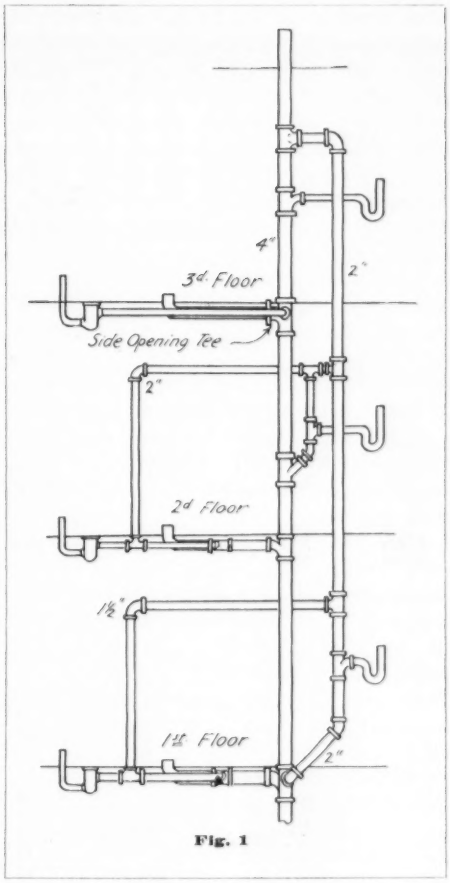


Fig. 1

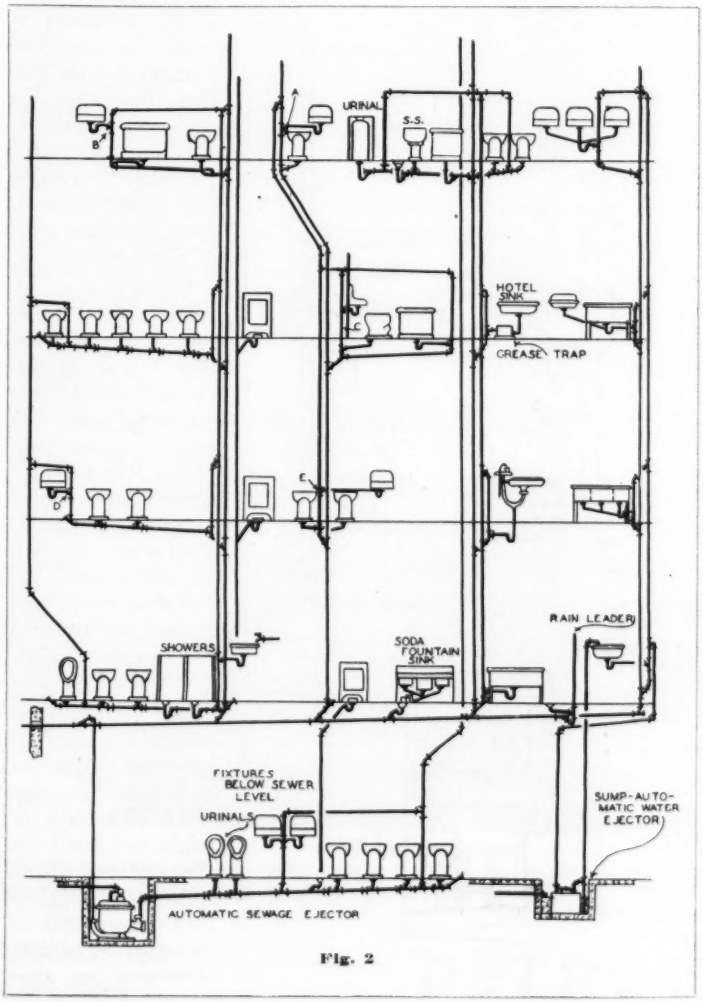


Fig. 2

tices which are OK'd by this admittedly high authority, which nevertheless have been subjected to criticism by many authorities. We do mean, however, that in recent years, and especially since the coming of the Hoover code, there has been a very considerable change in thought relative to the practice of wet vents.

As a matter of fact, we ourselves would not hesitate to express favor of any one of the wet vents shown in Fig. 2. In our way of looking at it, the reasoning that rejects a plumbing practice simply because it is not according to the orthodox laws that we have grown up under, is all wrong. Modern common sense and scientific investigation and experimentation have resulted in discarding some of the old-time iron-clad ideas concerning different plumbing practices, and the use of wet vents is one of the practices affected.

Time was, and not so long ago, when it was the rankest heresy even to whisper about using a vent pipe under any circumstances whatsoever, for anything other than venting.

Here and there it became the local practice to simplify venting by adopting such a method as the one shown at A, where a lavatory is connected into a 4-inch soil vent, or as at E, where such a fixture is connected into the foot of the main vent stack. Both of these connections have become well-nigh universal in their use,—almost no one looks upon either practice as questionable, and yet both are wet vents.

Not until the Hoover commission put its stamp of approval on the wet vent, however, did the practice come into its own. By this we do not mean that the wet vent has or should come into indiscriminate use, but that under certain restricted conditions its use has now become quite generally accepted as good practice.

Use of the wet vent is particularly acceptable in bathroom work or in a simple toilet room, where the lavatory wastes into the water closet vent. In each of these instances, it is almost never that two fixtures are in use at the same time or at least flushed at the same instant. Under such conditions there is practically no danger that a pipe which at a given instant is serving one fixture as a waste will also be called upon to serve another fixture as a vent at that same instant.

We think the conditions are quite different when two such fixtures as a sink and set of wash trays setting side by side are connected so that one or the other has a wet vent. Here it might easily be that both fixtures would often be used at the same time, and whereas we would favor wet vents in bathroom connections, we would not favor them for the sink and wash trays.

Another necessity in the proper use of wet vents is the increasing of pipe sizes to provide for the added work of the common waste pipe, for if the pipe is too small, and gradually becomes partially clogged, it may then fail in its effectiveness for venting purposes.

There are many different plumbing layouts in which wet vents are allowable under the recommendations of the Hoover code and report, all based on a comparatively few basic combinations. In Fig. 3 we show seven different layouts involving the use of wet vents, which are typical of many more, allowable under this authority, if we may so allude to it.

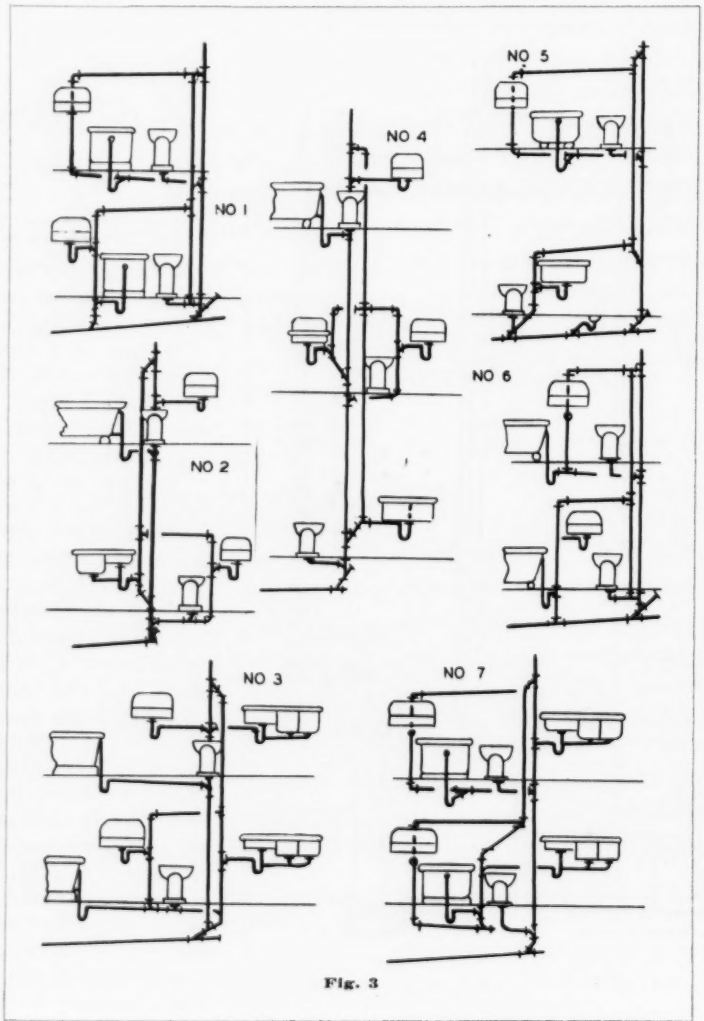


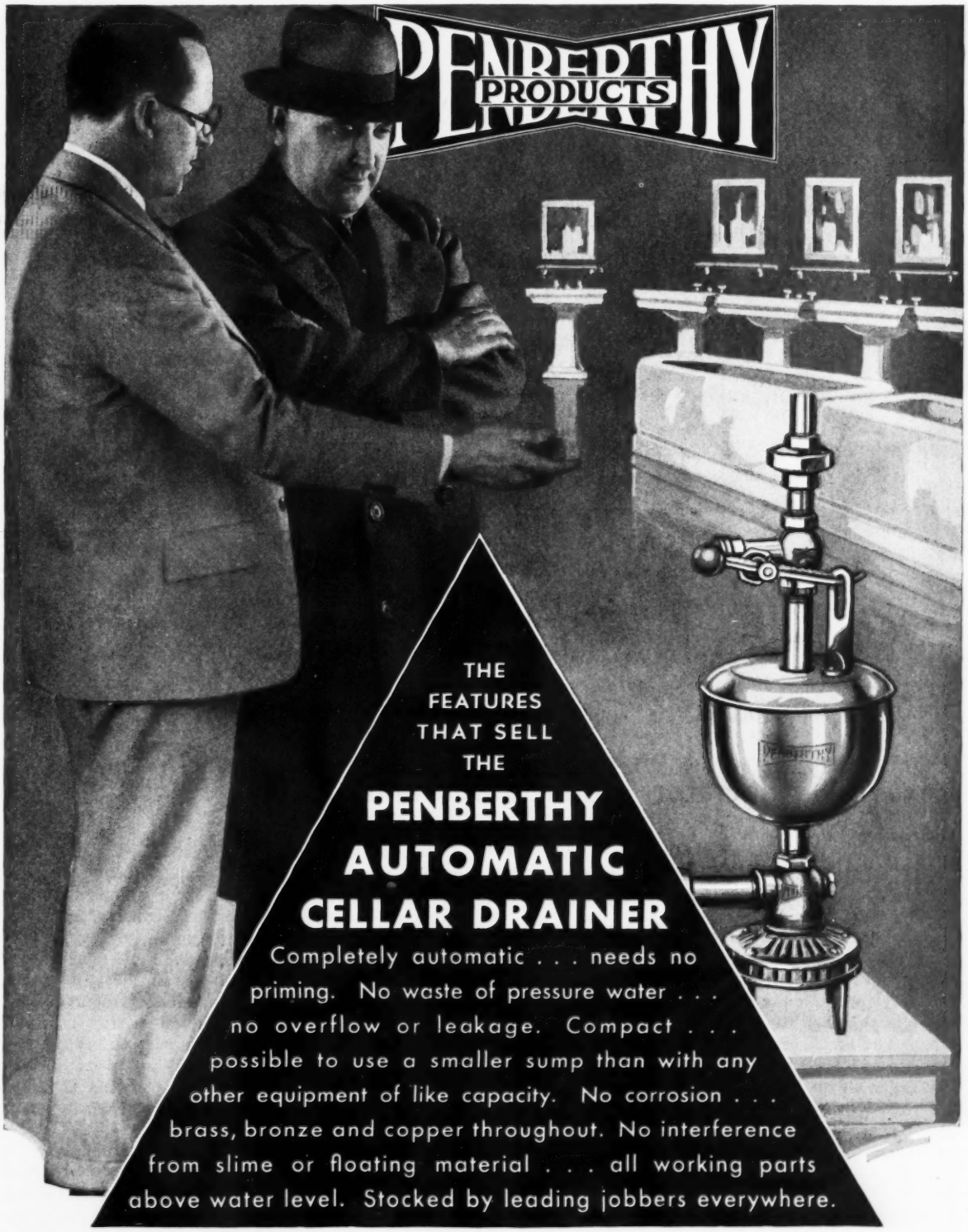
Fig. 3

In the letter on which this article is based, reference is made in the first paragraph to the fact that the writer has seen in DOMESTIC ENGINEERING no plumbing elevation that would pass inspection of the state of California.

We believe we are correct in saying that California has there is a set of laws no authorized state plumbing code, but known as the California Plumbing Code, "Compiled for the Bay Counties Conference of Master Plumbers," and endorsed by this organization and by the League of California Municipalities.

The fact that any particular plumbing elevation might not be in agreement with this code might or might not testify to the excellence of that code. It is very seldom indeed that an elevation of plumb-

(Continued on Page 127)



THE FEATURES THAT SELL THE

PENBERTHY AUTOMATIC CELLAR DRAINER

Completely automatic . . . needs no priming. No waste of pressure water . . . no overflow or leakage. Compact . . . possible to use a smaller sump than with any other equipment of like capacity. No corrosion . . . brass, bronze and copper throughout. No interference from slime or floating material . . . all working parts above water level. Stocked by leading jobbers everywhere.

PENBERTHY INJECTOR COMPANY

ESTABLISHED IN 1886

DETROIT

CANADIAN PLANT WINDSOR, ONT.

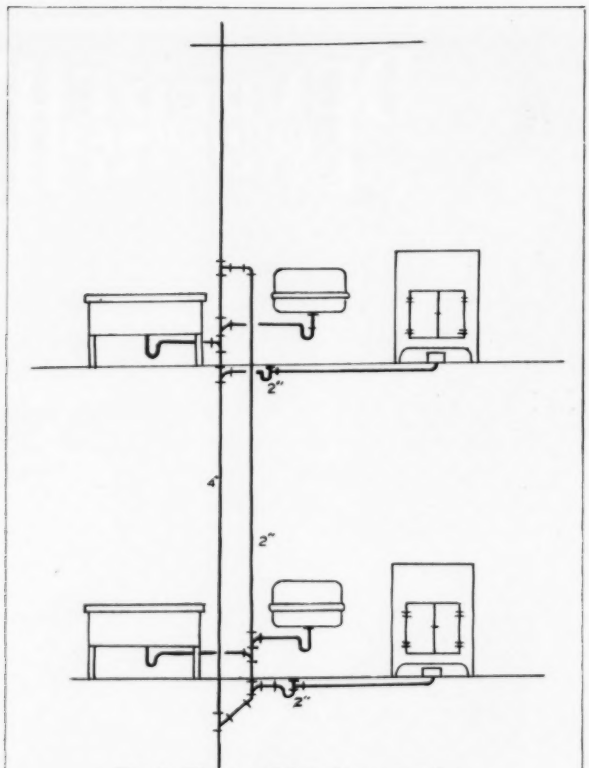


Fig. 1—Wrong refrigerator connections

THOMAS S. GRAVES suggests a discussion of

Refrigerator Connections and Wet Vents

NOT long ago there was submitted to the writer by a plumbing contractor, the connections for a kitchen stack in a two-family house. The layout in question is seen in Fig. 1.

The connections were not submitted for criticism, but as the proper method of installing this job.

It is not difficult to discuss this work and point out the errors, but the point that is of particular interest is the fact that this individual is not alone in his stand for direct connection of refrigerators into the drainage system.

Along with his layout was a letter from which we take the following: "The 2-in. cast iron trap for the refrigerator waste is used so that if there is no ice being used in the refrigerator, the waste from the sink will keep the trap sealed." This of course shows an absolutely wrong idea of the protection of refrigerators from sewer and drain air. However, this is not an isolated case,—our experience shows a surprisingly large number of plumbing contractors, who ought to know better, standing for just such methods as shown in Fig. 1, or similar methods.

The writer clearly recalls that during the time when DOMESTIC ENGINEERING was presenting incorrect plumbing installations as problems, and answers to the problems were later illustrated and discussed by the "Schoolmaster," this same tendency concerning refrigerator connections came to our attention time and time again. It recurred constantly.

Now here is a peculiar situation,—just at the time Fig. 1 was under our attention, the same general subject came to the surface from another individual. In the course of the correspondence which ensued, the writer sent a duplicate sketch of Fig. 1 to this second individual, and this is a part of his reply,—"The ice-box drain is a joke. Water does not run up-hill, and the only way this trap would fill when the ice-box is out of use, would be to have the stack automatically stop up below, every so often.

"You absolutely abhor the idea of connecting a refrigerator drain direct to the drainage system. Now where is this wrong, when it is properly trapped, vented and tied into the stack below the lowest fixture on that floor?"

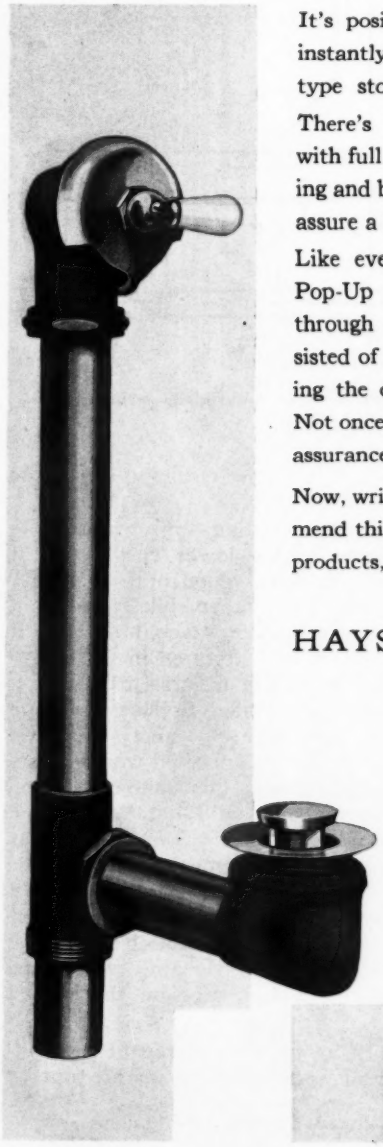
While this man looked upon the other man's refrigerator connection as a joke (which it certainly was), he himself was entirely favorable to direct waste connections for refrigerators, as shown by his layout, Fig. 2.

"Just for the fun of it," we looked up the plumb-

ANNOUNCING

A NEW TRIP-LEVER POP-UP BATH WASTE . . . . *By HAYS*

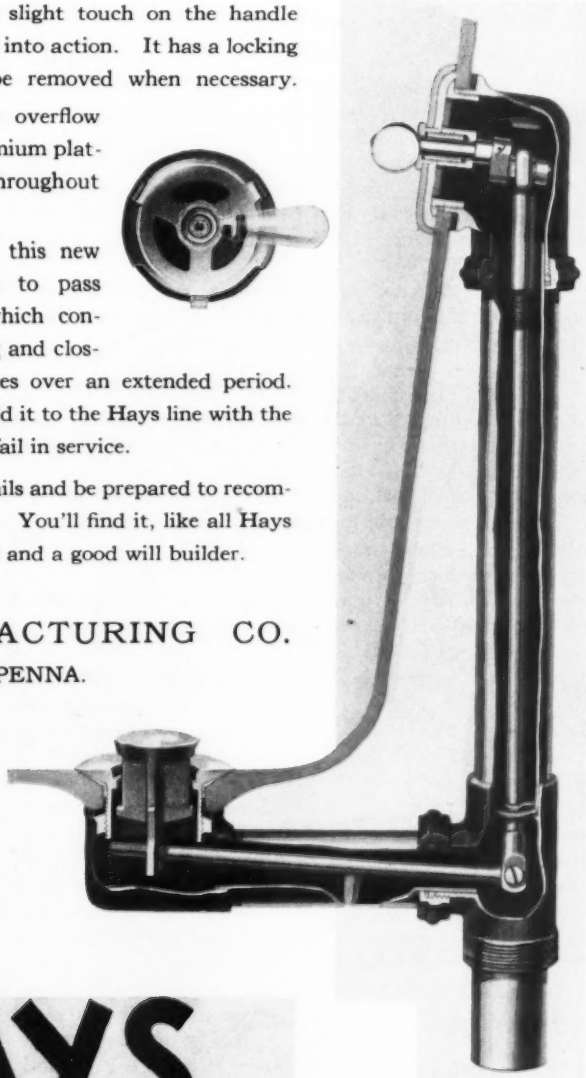
HERE it is. It's new. It's simple. It's failure proof. The new Hays Trip Lever Pop-Up Bath Waste had to be all these to take its place with Hays quality Built-in Bath Fixtures.



It's positive in action. A slight touch on the handle instantly brings the Pop-Up into action. It has a locking type stopper which can be removed when necessary. There's a concealed type overflow with full water way. Chromium plating and brass construction throughout assure a long life.

Like every Hays product, this new Pop-Up Bath Waste had to pass through a practical test which consisted of alternately opening and closing the drain countless times over an extended period. Not once did it fail, so we add it to the Hays line with the assurance that it will never fail in service.

Now, write for complete details and be prepared to recommend this fine new product. You'll find it, like all Hays products, a big profit winner and a good will builder.



HAYS MANUFACTURING CO.
ERIE, PENNA.

HAYS

ing law governing this man's city, and this is what we found,—"Refrigerators or other receptacles in which provisions are stored, shall not be connected directly with the drainage system, but shall be arranged to waste into an open sink in plain sight below such refrigerator or other receptacle. Such sink may, however, be connected directly with the drainage system upon being properly trapped and vented like any other fixture. Any waste pipes from refrigerators or other receptacles shall be trapped. Drip and overflow pipes from lead safes, under water closets or other fixtures, shall in no case be connected directly to the drainage system, but shall waste into some fixture in plain sight."

The first part of the opening sentence leads one to think the ordinance is a correct one, but later on it appears that what is meant is that a waste pipe cannot be connected directly into the refrigerator outlet, but that a direct connection to the pan (or sink as it is here called), under the refrigerator, is correct practice. Fig. 2 shows the method called for by this ordinance.

To be considered a direct connection the refrigerator pipe does not have to connect directly into the refrigerator, but such a connection as in Fig. 2 is universally looked upon as a direct connection.

A strange thing about the plumbing law above quoted is that while a direct waste connection for refrigerators is allowed, they are fussy about safe wastes and overflow pipes, and demand indirect connections for them. This seems exceedingly inconsistent.

This city that we are talking about is not a small cross-roads community, but one of perhaps two hundred and fifty thousand or more inhabitants.

Certain plumbing practices, often even in large cities, leave much to be desired. This that we have been discussing is really a vital matter, for it concerns contamination of food. To avoid all possibility of such contamination there is only one course to follow,—to use nothing but indirect connections.

The following rule gives the correct method,—"No waste pipe from a refrigerator or ice box floor drain, or any other receptacle where food is stored, shall connect directly with any house drain, soil or waste pipe. Such waste pipes shall in all cases empty into an open sink that is properly supplied with water, connected, trapped and vented, the same as other fixtures, or they may discharge into a downspout or rain leader trap located inside the building, or into a cellar floor drain, but their ends must be left open."

It is not only with respect to their refrigerator connections that Figs. 1 and 2 are interesting. In a way they are representative of the two extremes in plumbing installations. If anything, the venting in Fig. 1 is simplified to too great an extent, while the work in Fig. 2 is installed with too extravagant a use of material, and that of course means also a too extravagant use of labor.

As a matter of fact, leaving out of consideration the refrigerator connections in each installation, we would prefer to take our chances with the layout given in Fig. 1, rather than with that of Fig. 2, and we are entirely certain that the bill for labor and material on Fig. 1 would be much more to our liking,

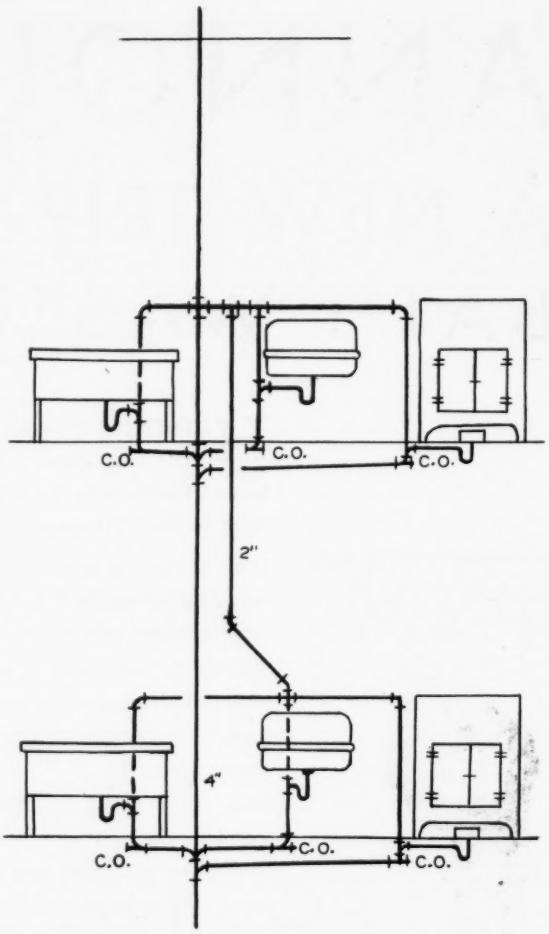


Fig. 2—Incorrect refrigerator connections wrongly connected

in the event that we were on the receiving end of the bill.

The chief question concerning Fig. 1 relates to wet vents. Referring to the lower floor work, it would certainly be considered good practice everywhere to connect either the kitchen sink or the laundry tubs into the foot of the vent stack, but would it be advisable to connect both fixtures in this way? The main vent is 2 in. Both fixtures are flat-bottomed, which ensures a trailing discharge, with a minimum danger of siphonage. In many localities, a bath and lavatory similarly connected would be acceptable, but in many instances this same connection for sink and laundry tubs would not be allowed. What is actually wrong about the connection as shown in Fig. 1? Our own opinion would favor the connection. Here is a debatable practice, and it would be beneficial to see it freely discussed.

If we accept the wet vent connection in a 2-in. line on the first floor, we must certainly accept the same combination into a 4-in. pipe on the second floor.

We think Fig. 2 shows an extravagant and unnecessary amount of venting, with no attempt at simplifying it.

(Continued on Page 127)

AUTOMATIC HEAT

A new editorial service for the growing number of heating dealers who are bringing higher standards of comfort and convenience to the American home

In this Issue:

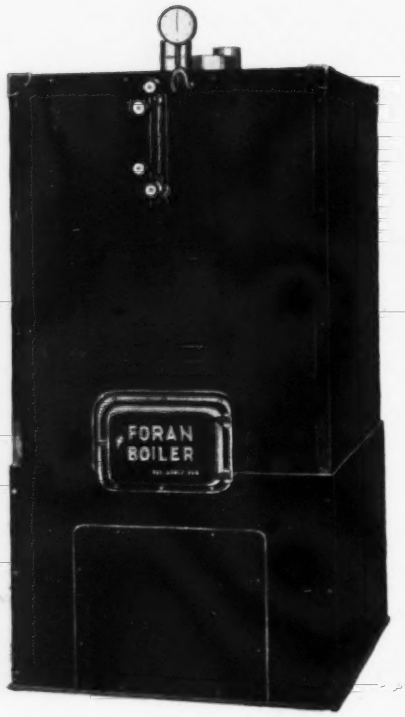
A Complete Plan for Stoker Sales

Easy Circulation Important in Gas Heating Installations

Good Will and Constant Advertising Sell Gas Heating Jobs

Sales, Installation and Service—A Balanced Program for Oil Burner Business

AUTOMATIC HEAT



ATTRACTIVE FINISH IN BLUE ENAMEL

MORE HEAT

FORAN IMPROVED COPPER and STEEL TUBE BOILER

Scientifically Designed

FOR OIL, GAS and COAL BURNING

Save 30% to 50% in fuel costs — A good investment

FORAN BOILERS SCIENTIFICALLY CONSTRUCTED for Oil or Gas fuels, obtain a rapid and positive circulation by circulating the water through a large number of small (¾ in.) "U" shaped copper tubes, connected with side circulating columns placed directly in the hottest part of the heat chamber, and so staggered that they absorb the heat from all sides, bringing the water to the steaming point or circulation, very much quicker than it is possible to obtain in a Cast Iron Boiler, where you are obliged to heat a large body of water. This construction insures rapid and positive circulation, and a saving in fuel cost from 30% to 50%.

The thin wall of the Copper Tubes and their greater heat conductivity permit the water to begin the absorption of the heat units the instant the boiler is lighted.

The combustion chamber of the Foran Tubular Boiler is so designed that complete burning of oil or gas fuel is accomplished. As a direct result of its shape, size and air-tight construction of the fire box, the highest efficiency and the greatest economy are obtained from the fuel.

Foran Boilers are also designed with steel tubes for coal burning, especially for AUTOMATIC STOKERS. They are interchangeable for either kind of fuel without any change in boiler construction.

Your prospect will realize a good investment in the Foran Boiler when you explain to him that they will produce "More Heat" in a given time with a saving in fuel costs of from 30% to 50% over the conventional type of boiler.

THEY COMPARE FAVORABLY IN PRICE WITH STANDARD MAKES OF BOILERS.

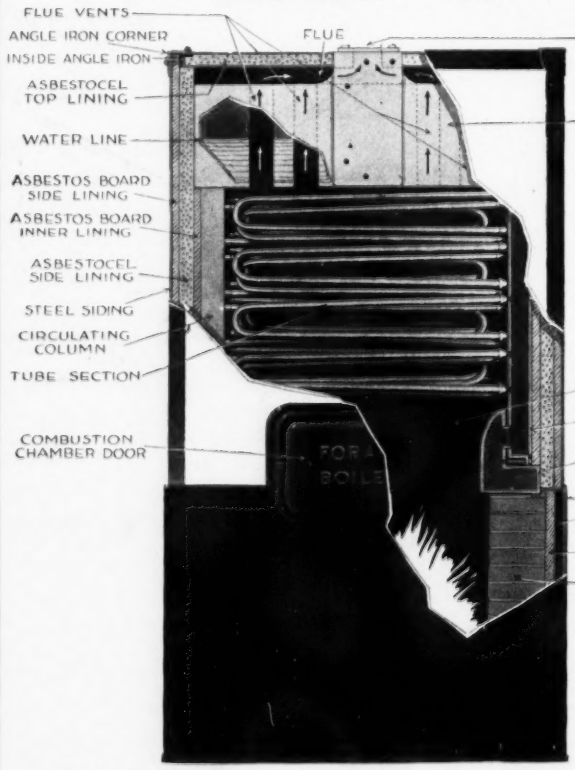
Desirable territory now available to Distributors.

FORAN BOILER CO., Inc.

General Offices and Manufacturing Plant

FLEMINGTON, NEW JERSEY

Sectional View



Sectional view of the Foran Tubular Boiler shows clearly how radically it differs from the conventional coal burning type of boiler.

Note the thickly nested "U" shaped tubes, directly in the path of the heat travel, insuring rapid and positive circulation of the water. The tubes are so spaced as to allow equal distribution of the gases and for easy cleaning.

The brick insulation in the base not only prevents loss of heat but radiates the absorbed heat hours after the burner is shut off. Foran Boilers are thoroughly insulated.

Part I of

A Complete Plan for Stoker Sales

Exterior of the Cox store, where stoker sales are planned

as worked out by a heating contractor and described by

CHARLES L. MILLER

Sales Manager for Harrison F. Cox of Paterson, N. J.

WITH a background of twenty years in the plumbing and heating business, specializing in the latter, Mr. Harrison F. Cox of Paterson, N. J., concluded that he wanted to apply modern merchandising methods to his business. Being interested in and familiar with heat, he sought an exclusive franchise on a heating specialty.

The demand by the public at this time for automatic heat led Mr. Cox into this field for a specialty. Confronting him was the problem of what heating device to back with his reputation, money, and time. It was necessary not only to select a device of which he thought well, but also one which "Mr. Average Consumer" would like and buy.

Selecting a Specialty

Considering the choice from his own viewpoint Mr. Cox did not deem it necessary that his product be established, so long as it was backed by a company large enough and strong enough to put its article on the market. It might be better to grow with an automatic heating device than to grow to one. The mechanism had to be as near foolproof as possible, because the average home owner is not qualified for or interested in the care of complicated and intricate machinery and because service was an item to be reckoned with. The article should be easy to install, due to high cost of labor and the required amount of executive responsibility. It would be best not to invest in a large quantity of unremovable equipment and labor on each installation. The device had to be efficient in itself and had to operate efficiently under existing conditions of the ordinary heating plant. Preferably it would be applicable to the smaller heating jobs, for there lay the possibility of a large volume, and there also Mr. Cox was most familiar.

However, an automatic heating device meeting the above specifications might not be salable. "Thus," as Mr. Cox says, "I had to view the field from the average buyer's position. The prospective purchaser would be looking for a maximum of comfort and convenience with an eye to cleanliness, safety and quietness. Besides a low original cost a prospect would desire economy of operation and maintenance."

One day, while visiting a large boiler manufacturing company's plant with some fellow plumbers, Mr. Cox saw a device feeding coal to and removing ashes from

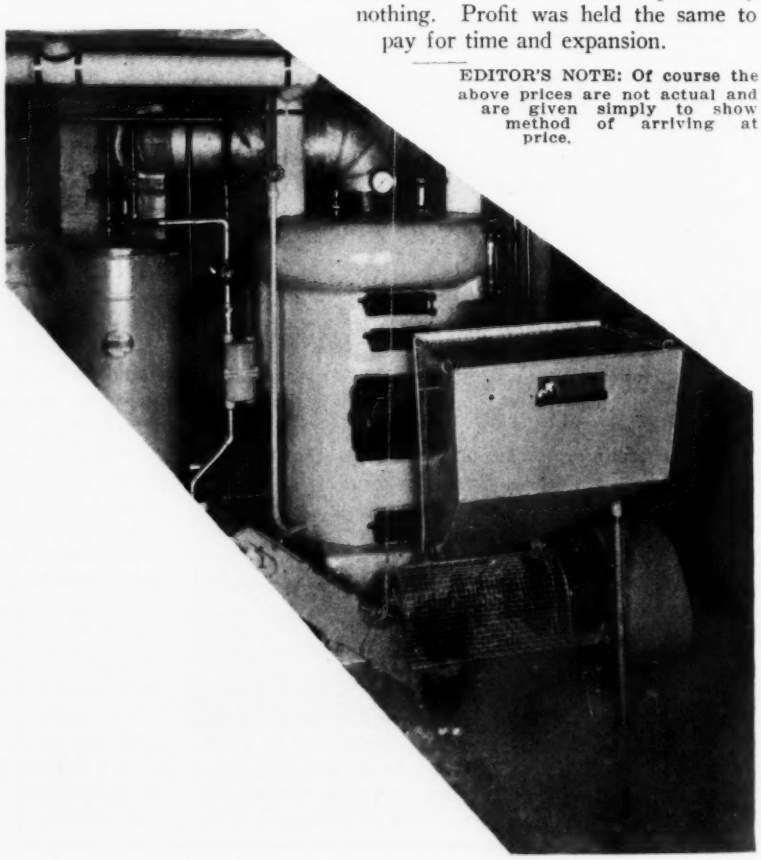
a boiler. The high combustion efficiency and simplicity of the unit attracted his attention. The very next day he started an investigation into this novelty and its company. He found that the device was a comparatively recent development of a young company. Satisfied as to the possibilties of this stoker in 1926 Mr. Cox took the franchise to distribute it, thus becoming one of the first independent dealers of this company. Realizing that his stoker was young, and subject in its infancy to all manner of childish diseases, Mr. Cox expected that his first installations would require nursing along. However, he banked on a product for the future that would stand on its own feet and make its way in the world.

One Year of Experience

For one year Mr. Cox devoted his time to the stoker. In that time he alone sold, installed and took care of twenty-two units; this with a product unknown to the public and new to himself. In this year he learned his product, what it cost to install, what might happen to it in different instances, what could be claimed for it, and what might be expected as to sales.

With this first hand knowledge Mr. Cox was in a position to accurately establish policies, prices, and methods. He saw that his heating business would work right along with the stoker, the one helping the other. His training being most valuable in the heating trade and the latter requiring a greater part of his time, he decided to point toward a sales department for his automatic coal burner. This would permit his supervision over stoker sales and installations and leave him fairly free to build up a retail heating business. First, however, a volume sufficiently large to support a sales department must be in view.

This heating contractor sought an automatic heating specialty, because he felt this to be a growing market. He considered his first year's work experimental; after that he was ready to step out and try for sales on a large scale. A unique feature of his plan is the offer of stoking service, at so much per ton of coal, thus giving his customers what is, for them, a completely automatic heating service. Below is an installation in a one-family house.



Establishing a Selling Price

To establish a selling price was the next step in the program. To the cost of the equipment delivered on the job Mr. Cox added the cost of labor and material necessary to make the average installation, allowing time to go to the job and return. To this was added the electrical connection. The total of the above was the installed cost. If any number of stokers were sold the first two years, it would cost about $3,000 to operate a service department one winter, including auto expense, office help all day and to 11 P. M. at night, and the labor itself. A volume of 100 sales would make a net service cost per installation of $30. This amount was added to the installed cost. Next it was decided necessary to pay about 10% sales commissions to a salesman. To allow for a few extras and supervision, such as a sales manager, a total selling cost was set up of 12½% of the selling price. An advertising expense for exhibitions, newspapers, etc., was approximated at 2½%. A percentage for overhead and profit was also applied. By taking installed cost plus service and dividing this by the sum of the percentages subtracted from 100%, Mr. Cox obtained his selling price. Commissions, overhead and profit were thus figured on a definite percentage of the selling price.*

Of course, as the volume increased some of the costs per unit were decreased. This reduction was most noticeable in the service department. Sales costs remained about the same. Overhead was reduced practically nothing. Profit was held the same to pay for time and expansion.

EDITOR'S NOTE: Of course the above prices are not actual and are given simply to show method of arriving at price.

An eight-flat building in which the Cox organization has a stoker installation

Mr. Cox has watched several automatic heating equipment concerns start up only to fail. The reported percentage of successful specialty houses is about 10%. Mr. Cox believes the failure of the other 90% is attributable to incorrect estimates for overhead and service. That there is such a high percentage of failures Mr. Cox regrets. His advice to those of us who would succeed is to know the costs of doing business yearly and apply thereto a reasonable profit.

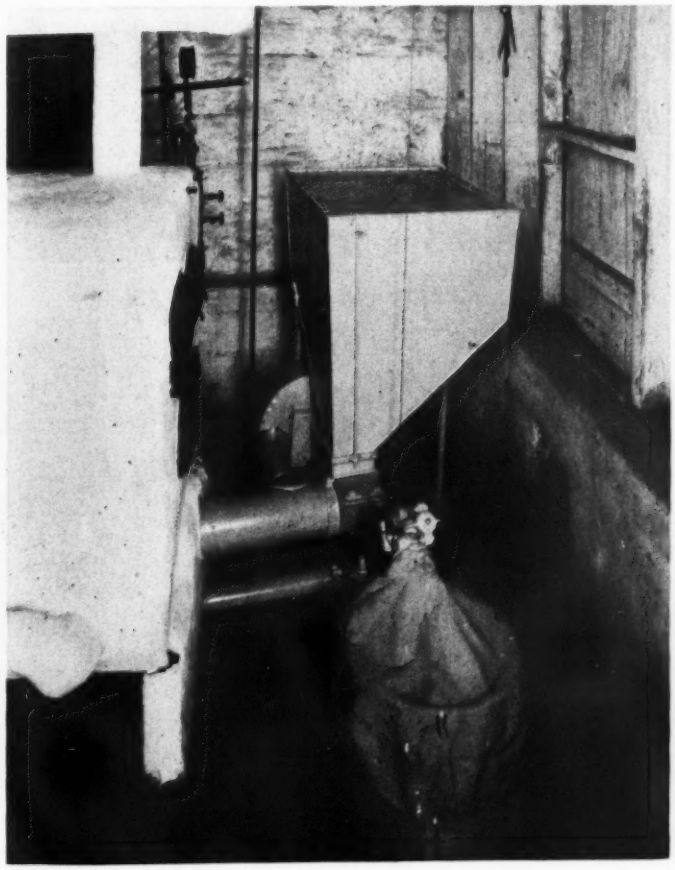
In the automatic heating field no two jobs are exactly alike. Wherefore, it is possible to estimate each job, and no two jobs need be alike in price. This business is the exact opposite of a store business, where goods are sold over a counter. Each installation is an individual proposition having its own peculiarities, for which the consumer should pay. Thus Mr. Cox was set up with a regular unit price but prepared to add on for the extras.

Details of Sales Organization

With prices decided upon, it remained to seek ways and means of securing business. The expected volume could support but one service and installation organization in the entire territory. Thus representation had to be along sales lines only. Here again Mr. Cox believes be made a wise decision. The territory included three counties, and by some it would have been considered foolish to attempt to cover it from a central point. But he has covered it with such fine results that he enjoys a reputation for fine service.

So the ordinary appointment of dealers was out of the picture and the outlying points had to be covered by salesmen or sales organizations only. Mr. Cox employed a sales manager in charge of sales agents. This man in spare time sold units to the consumer, thus earning part of his salary. Under the manager were two types of representatives, the salesman who worked from the main office, and the sales agent who maintained a demonstration unit, took charge of advertising, etc. The latter, of course, received more commission than the former, as he assumed more responsibility. It must be borne in mind that no sales agents were appointed within seven miles of the main office.

Conflict was bound to arise with this set-up, one man running into another's prospect. To take care of this, a main card file alphabetically indexed was maintained at the home office. On each card was the name and address of prospect, how the prospect was secured, the date of the filing and the representative's name. Clipped to the top of each card was a colored metal tab, each



This is the installation that furnishes heat to the eight-flat building shown at the head of this page

color corresponding to a period of time, such as April first to April fifteenth.

So long as the card was in the file with a tab on it, the man covering that prospect was protected against encroachment by another salesman. As soon as the card remained in the file with no tab it was considered anyone's prospect. To explain when and why the tabs were removed we must refer back to the original filing.

Let us consider that Mr. Jones, a salesman, brought in a prospect on March tenth. A card was made out as above and Mr. Jones was asked when he was going to make his next call on his prospect. Upon learning that the follow-up was to be about April first, the color tab denoting April first was placed on the card and the card filed. Thus on April first, the sales manager, going through the file, as he did every first and fifteenth of the month, removed the cards with that color tab. Each salesman was notified of his intention to call. If, by the fifteenth, Mr. Jones had reported progress, the card was tabbed with a future tab color and the process repeated. If, however, by the fifteenth Mr. Jones had not reported on the card, no tab appeared and the prospect was anyone's.

Keeping Prospects Live

This system of a limited period of protection kept each representative close to his prospects and gave the office a record of the calls and progress being made. Also, very few prospects were neglected. This system made for complete harmony and at the same time was efficient.

Prospects were secured by canvassing, through users, and by calling periodically on coal dealers. As soon as a name was secured, a mailing piece was sent. Canvassing required a great deal of energy to find prospects. Users could not supply a sufficient number to keep things moving. Taking advantage of the fact that he was selling something in which the coal dealers were interested, Mr. Cox had each representative closely contact certain dealers with the idea of getting as many leads as possible, if not the dealer's complete mailing list of users consuming over ten tons annually.

This was, in a measure, successful, but quite often the lead from the coal dealer arrived in the hands of the salesman too late. Newspaper advertising did not produce enough leads to pay for itself. Mr. Cox found that the best way to secure leads was through live exhibits of the coal burner at fairs, shows, etc. A peculiar thing about an analysis of the source of each sale was that almost every one could be traced in some degree back to a recommendation of a user. Mr. Cox found that it paid to make perfect installations and render perfect service.

One of the many exhibits. This one ran for three months in a main street location. These exhibits produce prospects and sales

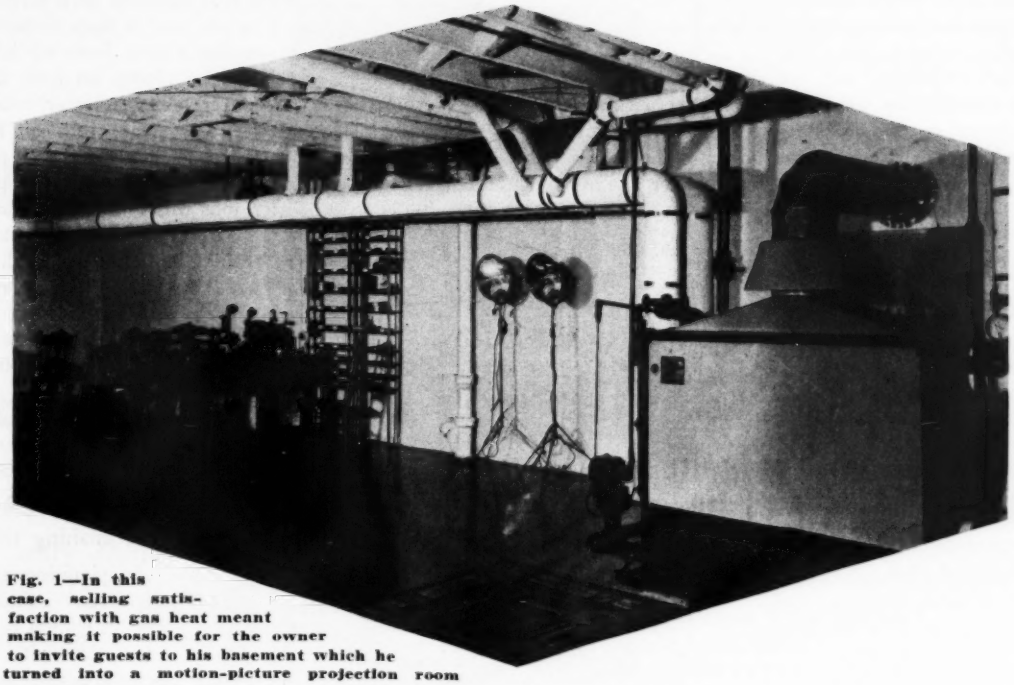


Fig. 1—In this case, selling satisfaction with gas heat meant making it possible for the owner to invite guests to his basement which he turned into a motion-picture projection room

Easy Circulation Important in Gas Heating Installations

By THOMSON KING

THE principal difference between automatic heat with gas or oil fuel and the familiar coal fired systems is that the supply is intermittent. It is turned on when the thermostat calls for it and cut off when the desired temperature is reached. The result of this is that we must have a system in which circulation may be quickly established. The air valves on radiators and the air vents on steam lines must be in good condition and allow the system to free itself of air quickly and easily. Steam lines must be properly pitched and dripped. Hot water lines and risers must circulate easily.

Of course all these things apply to any system regardless of the fuel. The point is that with an intermittent supply of steam or hot water the troubles due to such defects are more pronounced and more noticeable. Furthermore, the owner expects more from his automatic system and will be very likely to complain of matters that with a non-automatic fuel he would have never noticed or would have accepted as a matter of course.

It is, therefore, important and decidedly worth while to check over any system before installing gas to see that circulation will be easy and that radiation is properly distributed. If changes are necessary, the owner will in most cases appreciate being told about them and will have them made. If he does not, he cannot later complain of lack of foresight on the part of the dealer.

There is one other important point that should be considered under this head. Gas designed boilers contain less water than coal boilers of the same rating. For this reason and also because of their intermittent operation they are more sensitive to foaming, priming and lifting on steam systems due to oil or grease in the water. When such trouble occurs there is only one thing to do, which is to get the boiler and system clean. Going at this right the first time will save time and money in return calls. Make a top connection and blow out and run off until the boiler is clean. Return lines must sometimes be disconnected and blown out as the amount of muck that collects in them is often astounding. If the boiler after a cleaning behaves for a week and then begins to cut up again you will know that dirt is still working out of radiators and pipes and it must be blown again. Many contractors use various compounds to put in boilers, but by one means or another the system must be made clean to give final satisfaction and economy.

Sizing the Gas Line

The best practice calls for an independent gas line

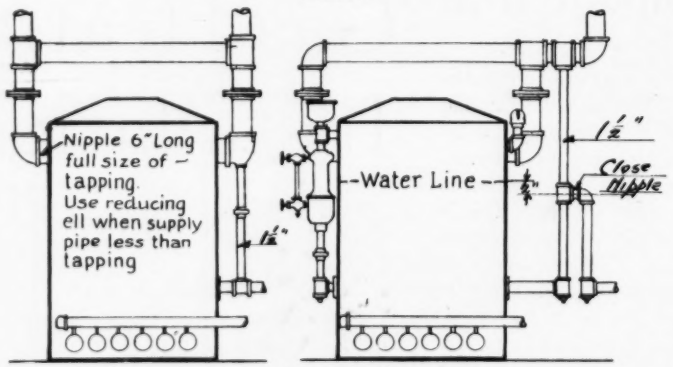
from meter to boiler without anything else on it. The reason for this is to prevent the possibility of pilots on one appliance being put out when the main valve of the other opens suddenly and causes a momentary drop of pressure in the line. It is common practice to run the line the same or one size larger than the gas connection provided by the maker on the boiler. The function of the line is to convey the gas from meter to appliance without undue loss of pressure. The loss of pressure depends upon the size of line, the amount of gas carried and the length of line including an allowance for fittings. The allowable drop in a gas line is usually taken as .3 in. of water column in manufactured gas territory and sometimes more for natural gas. The .3 in. allowance is always safe. In determining equivalent length of pipe count each ell or tee as equal to 6 ft. and a globe valve as 12 ft. of straight pipe. The following table gives the carrying capacity of pipes for gas of .6 gravity and with an allowable drop of .3 in.

Pipe Sizes for Gas Lines

Length of Pipe Feet	Diameter of Pipe in Inches									
	½	¾	1	1¼	1½	2	3	4	6	8
	Cubic Feet of Gas Delivered Per Hour									
15	76	218	440	750	1220	2480	6500	13880	38700	79000
30	55	155	320	535	850	1780	4700	9700	27370	55850
45	44	124	260	435	700	1475	3900	7900	23350	45600
60	38	119	226	380	610	1290	3450	6800	19330	39500
75		97	200	345	545	1120	3000	6000	17310	35300
90		88	180	310	490	1000	2700	5500	15800	32250
105		80	168	285	450	920	2450	5100	14620	29850
120			158	270	420	860	2300	4800	13680	27920
150			140	242	380	780	2090	4350	12240	25000
180			128	225	350	720	1950	4000	11160	22800
210				205	320	660	1780	3700	10330	21100
240				190	300	620	1680	3490	9600	19740
270				178	285	580	1580	3250	9000	18610
300				170	270	545	1490	3000	8500	17660
450				140	226	450	1230	2500	7000	14420
600				119	192	390	1030	2130	6000	12480

Suppose we must run a gas line to supply a boiler having a demand of 500 cu. ft. per hour, the line from meter to boiler measures 30 ft. and there are 5 ells and tees and a globe valve in it. The equivalent length of pipe is 72 feet. Referring to our table the nearest figure under length of pipe is 75 feet. Proceeding horizontally to the right from this figure we see that 1¼ in. is too small but 1½-in. pipe will carry 545 cu. ft. and so is okay. If our line had been 30 ft. long 1¼-in. would have been right, while if it had been 100 ft. we should have needed 2-in. Gas lines should drain towards the meter and needless to say should have as few ells and tees as possible.

Fig. 2—This shows two methods of manifolding steam boilers. The 1½-in. equalizer is a minimum dimension. The return connection through a Hartford loop as shown in the righthand sketch is recommended



Flow and Return Connections

When a gas boiler replaces coal the old boiler is usually removed and the new boiler put in its place. Formerly many cross connected jobs were made where a gas and a coal boiler were placed side by side and so connected that either could be used independently of the other. With the reliable gas service now available this now is seldom done, but where it is required gate valves should be provided on both flow and return lines of both boilers for steam jobs and on the return lines of hot water boilers. If valves should be placed on both flow and return lines of a hot water boiler a water relief valve should be placed on it. On steam jobs an adequate equalizer should always be installed between flow and return lines. In long boilers steam outlets should be manifolded. On water jobs this is not necessary if the radiation on the outlets is well balanced.

The sketch in Fig. 2 shows two methods of manifolding steam boilers. The 1½-in. equalizer is a minimum dimension. The return connection through a Hartford loop as shown is recommended.

Finishing the Job

In planning and making a gas installation it always should be remembered that matters of appearance are important. The owner is probably planning to use his basement for purposes that were not possible while using hand-fired coal or he will discover uses for it after he begins to use gas. Many a coal bin has been promoted to a club room, work shop or play room for the children after gas was adopted.

Placing the gas boiler on a brick or concrete base or pedestal say 6 in. high and extending 2 in. beyond the base of the boiler in each direction is always an improvement. The boiler looks better, it is easier to get at the burner cocks and controls and the floor can be washed down with a hose without splashing the boiler jacket. If the advantages of such an installation are explained to the owner he is usually ready to pay for it and the cost need be very little unless he wants something really handsome with tile facings.

By attention and forethought along the lines suggested the contractor may save himself trouble and expense and secure not only a satisfied customer but an enthusiastic booster who will help him to additional business which can be taken, not by cut throat competition but, on the recommendation of work well done and at a fair profit.

AUTOMATIC HEAT

Transformed by Gas!

Losses *and* Low Profits

Basements are not the only things that Barber Gas Burners transform. They'll transform those low profits and losses into the kind of profits that you want to make. The big swing to AUTOMATIC HEAT is on. Make it pay you!

BARBER
Automatic Jet Gas
BURNERS

THE basement has always been a place of WORK, DIRT and DISORDER to the home owner. Soot, dust, ashes and smoke have occupied it in the winter and left it filthy for the summer.

Not much use trying to keep it clean until Barber Gas Conversion Burners started to take the place of old-fashioned, back-breaking heating methods.

That was over thirteen years ago, and since then tens of thousands of homes have installed economical, carefree GAS HEAT with Barber Gas Burners.

Thousands more will become Barber Gas Burner users this year. Hundreds of them will be right in your community. Are *you* going to make these profits.

No costly replacements of any Furnace or Boiler equipment, and no installation inconvenience with Barber Burners. You can assure your customers of economical and efficient Gas Heating operation for their homes.

Let us tell you how easy it is to demonstrate, sell and install Barber Gas burners. Barber's plan of cooperation with its Dealers is one that insures "tailor-made" installations for every job

Write today for complete information.

The BARBER GAS BURNER CO.

3702-04 Superior Ave.
Cleveland « « « « Ohio

Good Will and Constant Advertising Sell Gas Heating Jobs

By A STAFF REPORTER

The Robertson Plumbing Co. store in Bayside, L. I., N. Y., recognized authority on gas heating

I HAVE no doubt but that most of Mr. Robertsons business has been procured through his personal magnetism, and his excellent salesmanship. First of all, he has what I have classified as four ways of procuring prospects.

A. Recommendations from his own customers.

B. Newspaper advertising, which he prepares himself, and runs in the local papers.

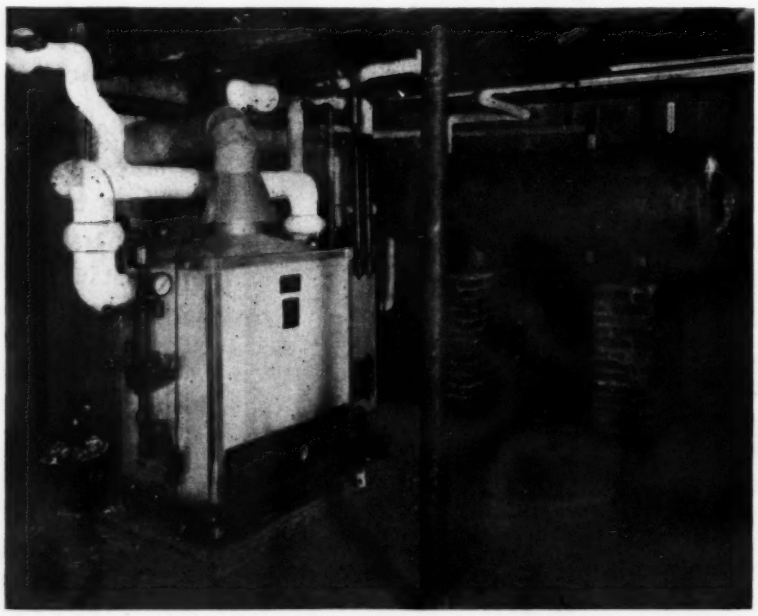
C. Direct mail, using stuffers furnished him by manufacturers.

D. Direct mail sent out by the local gas company to whom he furnishes his preferred mailing list.

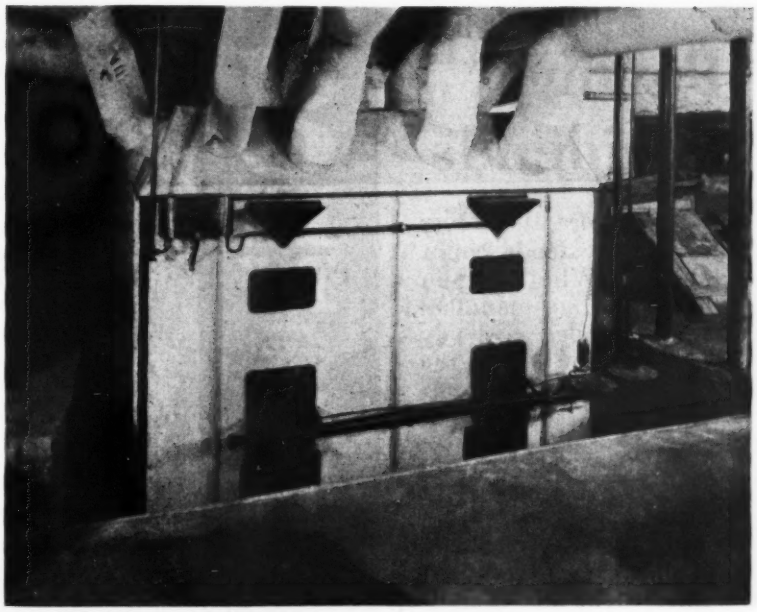
Keeping His Name "Out in Front"

The one good point about these activities is his belief that it is of vital importance to keep something before his prospects. By this is meant, that even though the selling of heating plants is of course his major business, he does not continuously circularize or advertise heating systems. He uses many different products to bring in inquiries, which in turn probably result in small sales, and of course the people who answer these advertisements are potential buyers of complete heating systems. For instance, he will have a concentrated drive in both his direct mail and newspaper advertising on toilet seats, or again on swing spout faucets, or he may even, in his direct mail work, drop temporarily the advertising of any product and send out menus or other household hints. This of course serves the purpose of building up a mailing list, or rather, of keeping a perpetual mailing list alive.

When at last he starts talking gas heating, he says he finds that experience has taught him not to press the sale too much, but to merely point out the major advantages of gas heating, and let the customer's curiosity start the ball rolling from then on. For instance, if he is called out on a repair job, either plumbing or



A gas job, with a water heater hook-up to the storage tank shown at rear of picture



Here is a warm air conversion burner job installed by Mr. Robertson

heating, he makes an inspection of the heating plant, then has a stock phrase which he always uses: "Some day you are going to burn gas." He lets it go at that and says that in the majority of cases he is approached by this person who wants to get further information about gas heating.

Selling Arguments

It is then that he goes into all details, but he particularly stresses fixed control, convenience, and human comfort. His next major sales points are, the stressing of free service by the gas company(i. e., the fact that the gas company makes periodic examinations of all gas heating equipment), cleanliness, comparative fuel costs, and the extra use to which the cellar may be put. If he is talking to a man, he of course emphasizes the elimination of work due to a cleaner house for the woman. In discussing comparative fuel costs, Mr. Robertson is very careful not to offend, and finds that a very easy way to get around this is to make his prospective buyer put some value on his own time, and this Mr. Robertson adds to the price of the coal, as against gas, where it is not necessary for the owner to spend any time in care-taking.

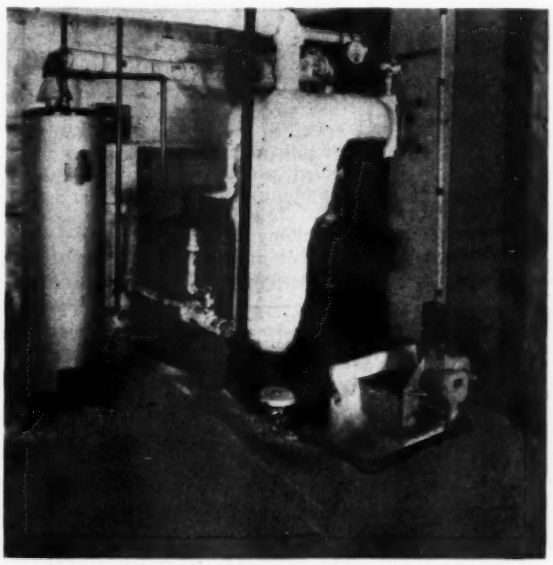
Mostly, though, Mr. Robertson depends upon the reputation he has built over a period of about 25 years, and the prestige he has gained in the community to further his sales contacts. He is very careful in all his dealings, that his reputation does not suffer or is not jeopardized. In all repair work, both plumbing and heating, that he is called upon to do, he never makes promises that he cannot keep, and keeps every promise he makes. It was easy to see from this that he has built up an almost priceless good will, and this he intends to keep at any price.

Going back a moment to the mailing list which he furnishes the gas company, any orders that come in of course from this, come direct to him and he benefits by them. If he gets a prospect that he cannot close in a reasonable length of time, he turns it over to the gas company, and they, because of their larger organization, are often able to save the sale that otherwise might have been lost.

"Digging In" in the Gas Business

It is interesting, in connection with the present review of Mr. Robertson's selling methods, to recall the story which we ran just about three years ago, dealing with his activities at that time.

In the process of establishing himself as a very logical person to consult in the matter of gas heating, Mr. Robertson undertook the remodeling of an apartment building in his community, with a man associated with him in the real estate business. This building is known as the "all-gas" apartment house, because the heating, water heating, refrigerating and cooking are all done by gas. The rate was based on the amount of radiation in the building, plus the water to be heated, plus the uses for cooking and refrigeration, which figures were estimated by the gas company experts.



Another conversion burner job in a Bayside home, put in by Mr. Robertson

AUTOMATIC HEAT

Paying Dividends

Today more than ever before dividends count heavy. Whether you use, install, or manufacture a boiler you pay close attention to the dividends you are getting on your investment.

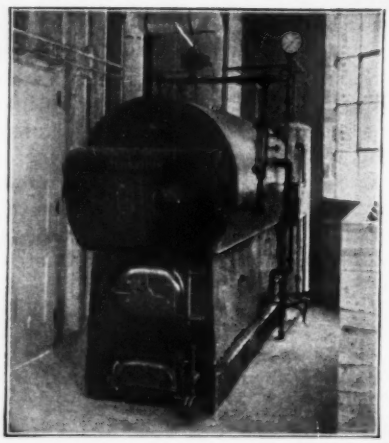
JOHNSTON Steel Heating Boilers have over a long period of years demonstrated their ability to deliver those dividends so needed today. More than just dividends in fuel savings, more than dividends in operating savings, but genuine dividends in satisfaction.

If it's real boiler value that you want . . . get a JOHNSTON STEEL HEATING BOILER.

Johnston Brothers, Inc.
Ferrysburg, Michigan
Box 372

JOHNSTON BOILERS

BOILER BUILDERS for 65 YEARS



The building remodeled had twelve apartments of four rooms and a bathroom each. It is heated by a thirteen burner, gas - fired boiler and the indirect heating of the water is provided for by a four - burner gas-fired boiler. In addition, each apartment was equipped with a gas refrigerator and a gas stove, built in combination.

As laid out, the job called for 1290 feet of radiation, the water supply to be kept at 145 degrees, automatically. The estimates called for 200,000 cubic feet of gas per family per year and ninety gallons of hot water per day were figured per family. Gas consumption for water heating was figured at 600,000 cubic feet a year, and for the refrigerators, 36,000 cubic feet.

Naturally, with a job like that back of him, being watched with keen interest by the utility company, inquiries developing from it would go to Mr. Robertson. We do not have space in which to show photographs of other jobs in which Mr. Robertson has installed gas heating systems—apartment houses of fourteen or more suites.

Advance Reprint from the METROPOLITAN REVIEW

ROBERTSON PLUMBING COMPANY CATERS TO LARGE CLIENTELE

"Bayside for Beauty" might well be the slogan of Bayside, New York, which is making a great bid for the title of New York's most popular residence for commuters. A visit to this beautiful spot shows a thriving and rapidly increasing community, with everywhere lovely and substantial homes in charming country surroundings. This season the record building activity gives evidence of the favor in which Bayside stands as one of the most convenient centres for those who wish to live out of the city's rush area at the trifling cost of a subway fare.

No small sign of the stability of that community is the fine solid structure of the homes. And as every builder knows, the truth about a house is told to the practiced eye in the plumbing. First class plumbing means a first class house, honest and worth-while, whether its size is large or small. That house is a good house in which the plumbing has been put in by the Robertson Plumbing Company of Bell Avenue, Bayside. This company has carried out the plumbing work in the best houses in Bayside and its environs. With a reliable staff of expert workmen, the quality of the work done is second to none, and the owner of a home which has Robertson plumbing knows that no troubles in that respect will haunt his path for many years.

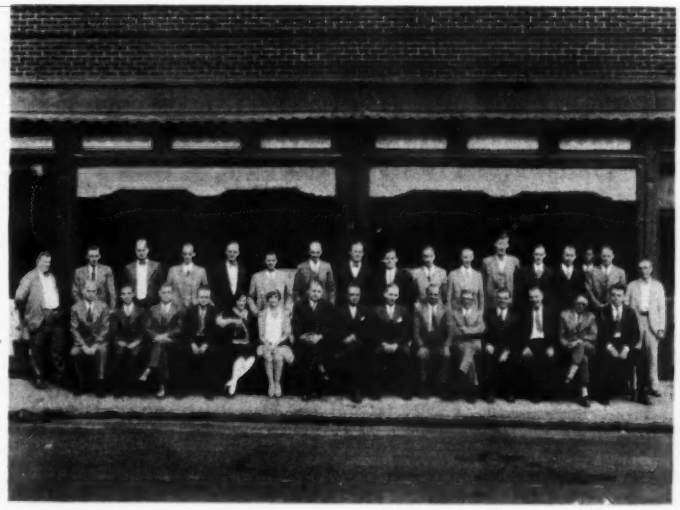
Builders who engage the Robertson Plumbing Company to put in the plumbing in houses on their developments know that the excellent workmanship put into this vital service will add materially to the price they will fetch when put up on the market.

Rented houses also increase in rental values, and few are the tenants who mind the extra cost if for the slight increase, they get perfect, scientific plumbing. They realize that good plumbing means good health to the family, a minimum of trouble in running the house, and added value in years to come. Good plumbing is practically everlasting and plumbing by the Robertson Plumbing Company is a cash investment which will bring increased value dividends for the future.

Mr. Robertson believes in keeping his name before the public in a publicity way, as well as in advertising

Sales› Installation› Service

A balanced program that includes the three essentials of a successful oil burner business



This organization applies the idea that sales, installation and service are the requirements most needed in handling oil burners

By J. A. POWELL

BECAUSE we have been successful in selling oil burners, people seem to think that we have some new and unusual method of merchandising. Actually, we have done nothing out of the ordinary at all. Hard work is the only thing that produces results. Probably sixty per cent of our leads come from satisfied customers, the rest from house to house canvassing in the thickly settled district of Newark, Jersey City and the adjoining sections of suburban New Jersey.

Obtaining leads from customers depends on two things—good service and maintenance of customer contact by the sales force. Customers or users of the oil burners which we sell are never lost track of. Immediately after the installation of a new burner, the user is called upon by the man who made the sale to see whether everything is satisfactory. These calls are repeated at longer intervals indefinitely and in this way the salesman finds out who of his customers' friends might be interested. More than half of our sales are made from leads obtained in this way.

House to house canvassing, or the cold canvass, usually is done during the months of April and May. Certain districts are selected, such as the better class streets of private residences which hold out some promise. By going from house to house in this way, much valuable information is obtained. Many of them already have oil burners, of a variety of makes; others have new and old heating systems of every kind. In every case we find out, or endeavor to do so, how well satisfied the owners are with what they have and what the prospects seem to be of making a sale. Careful records are kept and in this way we build up a knowledge of our territory.

This sort of canvassing is done only in the morning. In the afternoons the salesmen work on the more promising prospects which they have worked up either through the canvass or which have come to light in other ways.

Copy of the inspection report showing conditions of the job

BURNERS

Name.....
Street.....
City.....

Spark Ignition
Gas and Spark Ignition

INSPECTION

Model.....
Size Burner.....
Steam System.....
Vapor System.....
Hot Water System.....
Domestic Hot Water.....
Voltage 110 A.C.....
Voltage 220 A.C.....
Thermostat.....

	Yes	No		Yes	No
Burner Assm. Clean			Cond. Pumps--Good		
Gas Pipe Need Adj			Cond.		
Spk. Rod Need Adj			Cond. Oil Valve Diap.--Good		
Condition Spark Cable--Good			Cond. Gas Valve Diap.--Good		
Condition Transformers--Good			Cond. Ign. Tube--Good		
Condition Oil Valve--Good			Cond. Safety Tube--Good		
Condition Ign. Switch--Good			Cond. Stack Tube--Good		
Condition Gas Valve--Good			Cond. Thermostat Tube--Good		
Condition Metering Pump--Good			Cond.		
Motor Oiled			Cond. B-Control Tube--Good		
Condition Air Muff--Good			Size of Fan		
Cond. Draft Pipe Damper--Good			Cond. Pump Leather--Good		
Cond. Motor Brushes--Good			Air Intake Check--Clean--Good		
Cond. Motor in General--Good			Cond. Smoke Pipe--Good		
Condition Motor Bearings--Good			Cond. Bricking--Good		

Spark Off.....Min.....Sec.
Gas Off.....Min.....Sec.
Safety Off.....Min.....Sec.

DATE INSPECTED.....

Serial No.....
Motor No.....

Signed.....
Service Man

Signed.....
USER

Reverse for Remarks

During the balance of the year the salesmen work on the leads developed from their customer contacts, the canvass and inquiries which come in unsolicited. Local advertising plays only a very small part in our merchandising.

It will be realized that obtaining leads from customers is only possible when the latter are satisfied. This means that good installing and good service are essential. With these two thoroughly satisfactory, we can be assured of having satisfied users and while one may become tired of hearing a repetition of the adage, "satisfied users are the best salesmen there are," it is so fundamentally true in the oil burner business that we consider it the most important thing we have to accomplish.

Installation

There are three things about the installation of an oil burner which must be seen to. First, it must be installed properly if it is to work properly and with a minimum of servicing. In the second place, it must be installed quickly and with a minimum of inconvenience to the purchaser. Third, it must be installed with a maximum of economy.

To accomplish these necessary results, we have taken a leaf from modern scientific factory management. Complicated quality products, such as motor cars and the oil burners themselves, are produced in quantity at continually decreasing costs, by virtue of study and research, careful planning and systematically scheduled operations which have been standardized. The same principles have been applied to the installation, servicing and inspection of our oil burners. How this is done is very simple.

With each type of oil burner a certain definite amount and kind of material is required for its installation under normal conditions. All of these materials and parts are kept in the storeroom in separate compartments. Also stand-

JAN. FEB. MARCH APRIL MAY JUNE JULY AUG. SEPT. OCT. NOV. DEC.

NAME
Address
Telephone
Size Burner
Credit
Size Tank

	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
Calls												
Calls												
Calls												
Calls												
Calls												
Calls												
Calls												
Calls												
Calls												
Calls												

The year's record of service calls on a burner installation

ard blanket lists of material have been made out for each type of oil burner. When, therefore, an order goes through for an installation, all materials are assembled with the burner and placed in a box for delivery the day before the arrival of the installation crew.

SERVICE REPORT
BURNER

ELIN APPLIANCE CO.
328 Washington Street, Newark, N. J.
Mitchell 2-7380

No. W

Name ..... Date .....
Street ..... City .....
Time call received ..... From .....
Cause of Trouble .....
Time Started ..... Time Finished ..... Total .....
Contract ..... Guarantee ..... Charge ..... Rate .....
Installation ..... Amount .....
Service Rendered: .....
.....
.....
.....

Received payment
$.....

For the owner
.....

Individual service report turned in by mechanic

However before any material is delivered, the service manager makes a survey of the heating equipment. This survey is also for the purpose of deciding whether conditions are such that special materials or special instructions are necessary for the guidance of the installation crew. The service manager makes entries on the blanket material list and this is placed in the box with the materials to be shipped to the job. Also, in addition to this, the service manager or his assistant goes to each job the first thing in the mornning, giving verbal instructions to the installation crew as to the proper placing of thermostats, and such other special instructions as he finds necessary. The job is also checked before the end of the day. This gives us positive control of our man power as well as a complete check on our installations.

The best procedure for doing the actual work of installing has also been studied and standardized so that no unnecessary work is done. Of course this has to be modified from time to time where special conditions are encountered as noted in the instructions, but the same general plan is always employed.

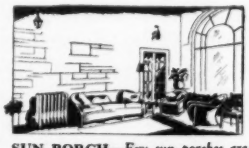
By following these simple methods, it is very rarely necessary for an installation crew to send back for tools or material. They leave the shop in the morning and finish the job in one nine-hour day, instead of in two or more days as formerly before the work was systematized. The cellar is swept up and the rubbish is left in a pile to be taken away the next day by our truck. The inspector also calls the next day and makes final tests on the equipment, and the job is complete.

It will thus be seen that the cost of installing is reduced to a minimum and that it is done in a thorough and efficient manner, which reduces future servicing to the lowest possible extent.

Of no less importance is the fact that the job is done in a businesslike manner, with the least possible annoy-

There is a Wide and Profitable Market for this Economical Gas Heating System

Today, when no sales possibility can be overlooked, Clow Gasteam Radiators offer a market that is already and waiting. In every community there are countless stores, factories, offices and homes where additional heat is needed. Radiators are compact and good looking. Each radiator makes its own steam. Heat is available almost immediately, and can be turned off as quickly. No boiler or intricate piping. Installation is simple.



SUN PORCH—*Few sun porches are piped for heat. Clow Gasteam can be installed with little expense.*

STORE—*Many thousands of stores everywhere, heated with Clow Gasteam, prove the practicability of this system.*

The greater use of natural gas has very much increased the interest in gas heating. The market for Clow Gasteam Radiators is steady—not dependent on new construction. They are the best way to modernize countless existing stove-heated stores, apartments, offices, etc. The recent reduction in price makes Clow Gasteam Radiators more easy to sell, meets competition—yet leaves a substantial [illegible]

Proved by 30 years of use, Clow Gasteam is a dependable and economical heating system. Sold on a dollars-and-cents basis as well as convenience. Write to us for new literature that will help you sell Clow Gasteam this fall.

OFFICE—*Countless offices are equipped with this heating system that provides heat at any time of the day or night.*

ATTIC—*The increasing use of attics creates a new need for heat. Clow Gasteam is the practical answer.*

JAMES B. CLOW & SONS 201-299 N. Talman Avenue, CHICAGO

CLOW GASTEAM

Listed by Underwriters Laboratories

Approved by A. G. A. Testing Laboratory

AUTOMATIC HEAT

The CONTINENTAL

"100"

GAS FIRED UNIT HEATERS

Here's a chance to develop that unit heater business you have always wanted to get.

With the Continental "100" Gas Fired Unit Heater every sales opportunity imaginable is yours. For complete heating systems, to augment systems already in that are inadequate; any place, in fact where a complete system or extra heat is needed.

We'll not go into construction details about the Continental "100" here. That complete information will be sent you when you write. What is more important to impress is that is has every sales and operating feature possible to earn bigger profits for you.

Why not write now, today!

Continental Stove Corp.
IRONTON, OHIO

ance to the purchaser of the burner. Thus his good will is secured at the outset, and the value of good first impressions needs no stressing for merchandisers of any commodity.

Servicing

Of course nothing can be of greater importance, from the standpoint of good will and minimizing sales resistance, than thoroughly satisfactory servicing. For this reason we have organized this branch of our business with the greatest care. In doing this we have seen to it that this department pays a profit and is an asset to our business instead of a liability tending to absorb

Houses exposed like this need efficient heating service

profits which might so easily be the case. We feel, and have no trouble in convincing our clientele, that satisfactory service justifies a reasonable profit and is the only sound business principle on which to operate.

As we have some eighteen hundred burners under direct supervision, it will be realized that a carefully worked out system of servicing is essential. One of the most important details of our servicing procedures is the maintenance agreement. This is in force with about 60 per cent of our users. For $25.00 a year we make a preliminary inspection of the equipment and base thereon an estimate for recommended repairs, if any are necessary. These are paid for extra. The burner being then in first class condition, we undertake to make monthly inspections and answer calls for a year without additional charge. It is obvious that the regular inspections and minor adjustments found necessary at such times have greatly reduced emergency service calls and of course keep the user from suffering much inconvenience, which is bound to result if nothing is done until trouble develops in the burner.

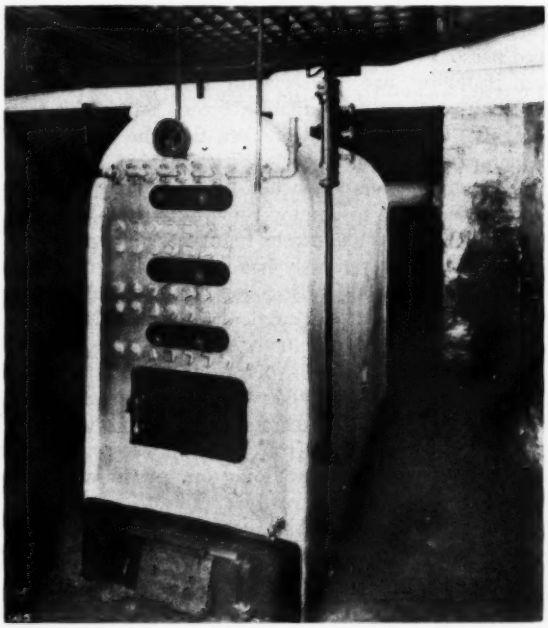
When inspections are made under the maintenance agreement, the service man has with him the form shown on page 74. By checking over each item listed, we are assured that nothing is overlooked. It is made out in duplicate, one copy being filed in the general office and one in the service department. It will be noted that it is signed by both the service man and the user, so that there can be no doubt as to the inspection having actually been made.

In the service department all calls are received by one man who enters them on the sheet shown in Fig. 3. This man also acts as dispatcher for the service men. The latter do not return to the shop between calls. When they have finished a job, they call in and receive orders

what to do next. Our territory is divided into districts with a service man for each. If no service calls have come in when the service man telephones the office after finishing a job, he is assigned an inspection in the neighborhood. In this way the time consumed in going from one place to another is kept at a minimum and the productive efficiency of each man maintained at a high level. This of course reduces the cost of service to the users of the oil burners, keeps down overhead and makes it possible to realize a reasonable profit.

For each service call the service man makes out a report in triplicate. One copy is retained by the customer, one by the service man and one is filed in the office. This form is shown on page 75.

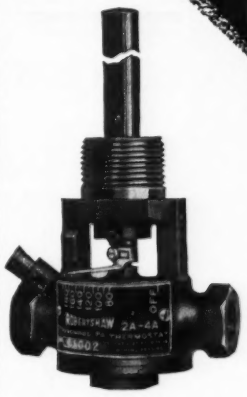
We also keep a file in the office with a card for each user. On this are entered all service calls, taken from the service reports. As will be seen from the reproduction, these cards cover a period of ten years, by months. Thus when a user has any complaint to make, it is an easy matter to refer to this and see exactly how many service calls have been made. This is especially useful as a user sometimes has exaggerated ideas as to how many calls for service he has required and this record shows exactly how much trouble he has experienced. Furthermore, the service reports give a permanent record of the nature of the trouble, which can be discussed with the users if advisable. In addition to this, the data thus secured are invaluable as a guide to the factory in showing what improvements may be desirable in design and to our own installation and servicing forces as an indication of what they may be able to do to avoid too frequently recurring troubles.



A boiler installation, showing type of job turned out by the Elin organization

It is a very interesting and significant fact that two years ago the daily service sheet was not large enough for all the calls for one day. Now, with the increased number of burners in service, there are rarely

ROBERTSHAW THERMOSTATS *for* EVERY USE

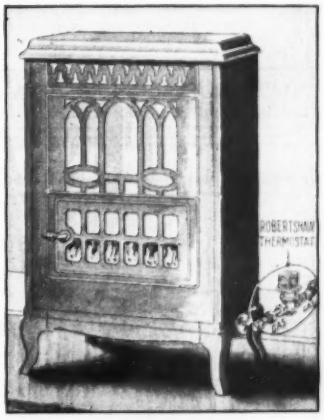


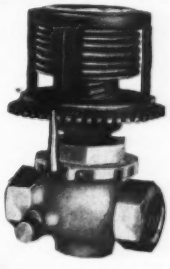
THROTTLING TYPE for Side Arm Water Heaters or Automatic Storage Water Heaters. All sizes from ⅜ to 2 inches. Robertshaw Throttling Type Water Heater Thermostats are fully covered in CIRCULAR FORM R-4.

SPACE HEATER THERMOSTAT

Automatic control is just as essential in the space heater as it is in the gas range or gas furnace. The Robertshaw can be used with every gas fired space heater . . . new or old . . . and enables you to add extra profits to every installation.

The No. 2E Robertshaw, developed especially for space heater use, is easy to install, positive and dependable. It is small, compact, and attractively finished. Be sure you have the complete data on this much needed thermostat.





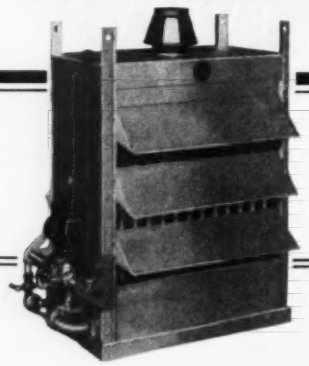
WRITE for these circulars . . . no obligation . . . and have the last word on thermostats

ROBERTSHAW THERMOSTAT CO.
Youngwood, Penna.

AUTOMATIC HEAT

The PITTSBURGH GAS-FIRED UNIT

HEATER



Figuring on commercial heating will no longer be a bothersome, expensive problem for you if you become acquainted with The Pittsburgh Gas-Fired Unit Heater. It fills every requirement easily and economically at a price that your prospects can afford to pay. It is AUTOMATIC and needs no regular attention and is wholly dependable.

The best way to do is to investigate it thoroughly. Write us for complete detailed information.

AUTOMATIC GAS-STEAM RADIATOR CO.
Brushton and Thomas Sts. PITTSBURGH, PA.

GET IN ON

"The Big Swing"

TO

AUTOMATIC HEAT

Heating men everywhere are turning to the pages of AUTOMATIC HEAT in DOMESTIC ENGINEERING for the type of information you find in the pages of this issue.

Technical discussions on stokers, oil burners, gas heat and their accessories; merchandising stories packed with worthwhile sales help and articles which assist with financing.

These are the things which you will find in AUTOMATIC HEAT, the paper that will get you in on the big swing to automatic heat that is just getting under way. Don't miss a single issue . . . . .

Read

AUTOMATIC HEAT

in every issue of

DOMESTIC ENGINEERING

more than fifteen calls per day. In other words, as a result of the regular inspections under the maintenance agreements, the systematized method of installation, improvements in the burners themselves and better maintenance work when that is done, there is only about one-fifth the servicing necessary now than was formerly called for. Naturally this is reflected in the attitude of the public toward the machine we sell, install and service, and doubtless is a very important reason why our business continues to increase in spite of hard times.

There is another important advantage in planning our work as outlined. This is that we can keep a well-trained force of men permanently employed with all the attendant advantages of an interested and experienced personnel. During the heating season there is not much installing, but the servicing is then at its height. The busy season of installation comes on as the heating season wanes and we can then take the service men off that work and put them on installing. Only during August and September, when the installing is most active, do we have to employ some extra help, but each crew is in charge of one of our regular, experienced men, so that we are not seriously handicapped by green help.

Another large house where the heating job must be properly engineered

It may seem that this discussion of the merchandising of oil burners has degenerated into a discussion of installing and servicing. Actually, this is not the case, for the three are inextricably involved with each other, especially in the thickly populated territory in which we operate. As already stated, a very large proportion of our new business comes from satisfied users giving us leads and to a large extent doing our preliminary sales promotion for us. This really applies to any kind of territory and we believe that such creation of good will is essential to success. These methods have brought success with our conditions. For other conditions, they would of course need modification, but probably the fundamental principles on which they are based will apply almost anywhere.

◆

How to Eliminate Window Draft

If rooms are drafty, occupants require a higher temperature than otherwise, thus increasing the cost of heating the building. Windows are one of the principal sources of drafts. The cold down-draft from a window is made up partly by infiltration and partly by cooling of the air in contact with the cold window pane. This draft can usually be eliminated by installing radiators under the windows.

These are the things for which the American public will spend millions ✦ ✦ ✦ ✦ ✦

OIL burners, stokers, gas boilers, burners and their accessories —automatic heat, the things American home and building owners and builders will spend millions for within the next several years.

And why not? They represent the culmination of man's struggle through the ages for healthful, convenient comfort in the places where he lives and works.

Automatic heat as it has been developed today gives the public what it wants—dependable heat that requires the minimum of attention at the lowest cost.

You have been and will continue to be the foremost automatic heat dealer serving the American public. You have waited for DOMESTIC ENGINEERING's new publication within a publication, AUTOMATIC HEAT.

Now you have viewed the initial numbers and we'd like your comments upon it. We'd like to repeat to you that we are anxious to have your questions on automatic heat, anxious to help you with your sales problems and with the matter of deciding upon the best types of automatic heat for you to sell.

We are anxious to help you get an ever increasing share of the millions the American public will spend for these things. AUTOMATIC HEAT will continue to bring you information of the kind you have sampled in this and previous issues.

Domestic Engineering

1900 Prairie Avenue

Chicago

AUTOMATIC HEAT

It's *New* . . . It's *Better*

it's G.E.

YOUR customers are reading these days about new heating efficiency — made possible by a new kind of heat regulator.

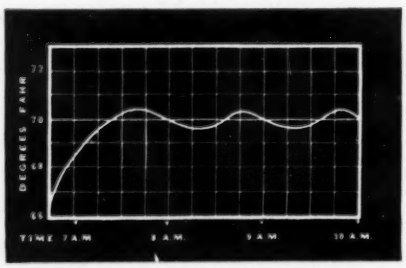
They know that this regulator bears the famous G. E. monogram; that it is General Electric's latest contribution to comfort, convenience, health and economy in the home.

They are learning of its exclusive features — features which make it possible to control temperature with not more than *½ of* 1 *degree variation,* regardless of whether there be a blizzard or a thaw outside.

Widespread interest is being created by a widespread advertising campaign. *You* can profit by this interest. Study the General Electric Heat Regulator for yourself. You will readily appreciate its outstanding advantages.

Tell your customers that it *anticipates* rises in room-temperature, and controls the heat accordingly; that it gives *graduated* control of drafts (or fuel-valves); that it has an *automatic* safeguard against possible dangerous consequences of interruption in electric house-current; that it can be installed without interfering for a single second with their regular heating.

There are two models: The single-range; and the double-range (illustrated), with an electric timing device for making day-and-night temperature-changes automatically. Liberal discounts are offered. Visit the distributor in your territory today. Or write us for full information. Penn Heat Control Company, *National Distributors,* Franklin Trust Building, Philadelphia.

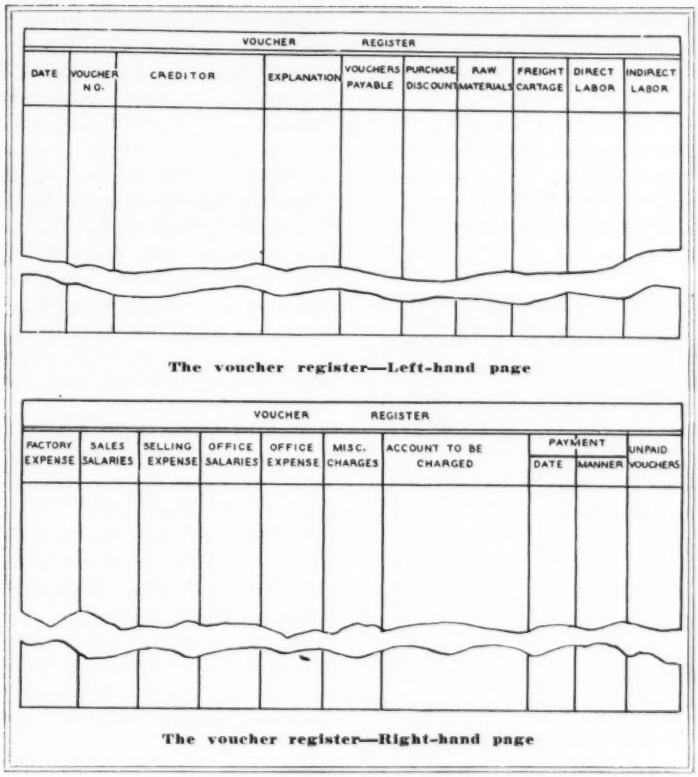


THE TEMPERATURE YOU WANT . . . AS LONG AS YOU WANT IT

Note the accuracy of the General Electric Heat Regulator in arriving — and staying — at the desired temperature. It varies no more than ½ of 1 degree either way. This accuracy is made possible solely by its exclusive features. Without them a fluctuation of several degrees is unavoidable.

GENERAL ELECTRIC
HEAT REGULATOR

FOR EVERY TYPE OF HEATING SYSTEM



VOUCHER REGISTER

DATE	VOUCHER NO.	CREDITOR	EXPLANATION	VOUCHERS PAYABLE	PURCHASE DISCOUNT	RAW MATERIALS	FREIGHT CARTAGE	DIRECT LABOR	INDIRECT LABOR

The voucher register—Left-hand page

VOUCHER REGISTER

FACTORY EXPENSE	SALES SALARIES	SELLING EXPENSE	OFFICE SALARIES	OFFICE EXPENSE	MISC. CHARGES	ACCOUNT TO BE CHARGED	PAYMENT DATE	PAYMENT MANNER	UNPAID VOUCHERS

The voucher register—Right-hand page

The Voucher System

and its advantages to the plumbing and heating dealer

By - - - - - - - - - - - J. J. BERLINER

THE "Voucher Register" or the "Accounts Payable Register" as it is sometimes called, is the book (of original entry) in which the voucher and its distribution are recorded. It is a book containing as many columns as are required for specific charges and a sundry column for accounts not requiring special columns. In the illustration of a voucher register shown the columns are divided as follows: In the first three columns are to be entered the date of the voucher, its number, and the name of the party from whom the purchase has been made. In the next column is entered the explanation of the terms on which the goods are bought; as, for example, one per cent 10 days, net 30 days, meaning that 1 per cent can be taken if paid within 10 days, or if held 30 days, net. The total amount of the voucher is entered in the next column headed "Vouchers Payable" or sometimes called "Accounts Payable." The purchase discount column records the cash discounts taken in paying. The other columns are for the distribution of the various kinds of expenditures in such a way as to facilitate their postings to the general ledger. The decision as to whether or not to have a column for a group of items depends on how frequently these items appear. If they must be recorded at brief intervals so that there are a large number during a month, then it is usually wise to have a column especially for them.

Posting of Summary Totals

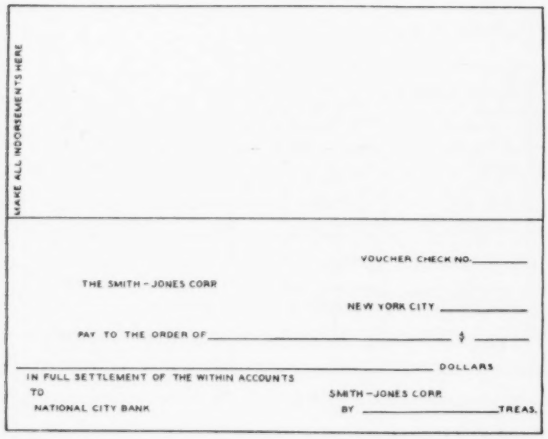
At the end of the month, or oftener if desired, the voucher register is summarized and posted. This is accomplished in the following manner:

1. All columns are totalled and the voucher register

is balanced. Balancing consists of seeing that the combined totals of all the distribution columns are equal to the totals of the "Vouchers Payable" column plus the "Discount" column.

2. The total of each money column, except the "Miscellaneous" column is posted to its respective ledger account, the ledger page number being shown at the left of the total; or, if there is not room in that space, just above the total. The items in the "Miscellaneous" column are posted individually to the respective ledger accounts.

Proof of distribution should always be secured by checking the total of the distributive column totals against the total of the "Vouchers Payable" column. In posting, the total of the "Vouchers Payable" column is credited to its account, while the totals of the distributive columns are charged to their respective accounts.



Above: A voucher check (double), the face. Right: The reverse

Effect on Cash Book

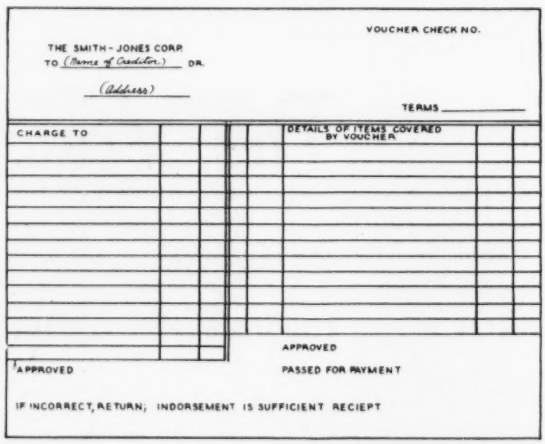
The advantages of this periodic posting of expense column totals as compared with the detailed posting of such items from the cash book as required under the old method (*without the voucher system*) is apparent. The cash book is in this way relieved of all need of naming the account to be charged for each detailed entry, the proper charge having been made from the voucher register. If every transaction which will ultimately give rise to a disbursement of cash is vouchered and therefore recorded through the voucher register, there is really no need of a detailed entry of the checks on the cash book, for only their total is posted.

Sometimes, to facilitate reconciliation with the bank account, the voucher checks are given a new series of numbers, known as treasurer's numbers, when issued in payment of invoices. Where this is done, the cash book shows entry of all checks in the numerical sequence of treasurer's numbers, just as entry in the voucher record is in the sequence of voucher numbers. Some checks are held before issue longer than others due to different lengths of credit term, etc., justifying the need for this new series of numbers.

Payment of Vouchers

After the preparation and entry of the voucher into the voucher register, if payment is to be made at once, it is passed for payment by the treasurer or other fiscal officer and the check is drawn and issued. Any cash discount taken should be shown deducted on the face of the invoice, the check carrying the net amount. Where payment is to be made at a later period, but at the same time the terms of credit necessary for discount are to be observed, the voucher should be filed away in a tickler file which will automatically bring it up for attention at the proper time. The original invoice is placed in a temporary file, arranged alphabetically, until paid, when it may be removed and filed permanently with the paid voucher. Upon payment of the voucher, the check is entered among the cash disbursements, and a notation is marked in the payment column of the voucher register, showing the date and in what manner payment was made.

For the proper operation of the voucher system, an alphabetic index of creditors must be made up on which should be shown the voucher numbers relating to transactions with each creditor. This is usually of the card index type, each creditor being provided with a card on which is noted a list of the vouchers recording the business done with him. This voucher index, while not a ledger in the accepted sense, serves all the essential purposes of a creditors' or accounts payable ledger, when it is operated in connection with the payment column in the voucher register. Moreover, the use of the "Unpaid Vouchers" column secures at the end of the month the detail of the summary account, "Vouchers Payable," carried on the general ledger.



Canceling Vouchers

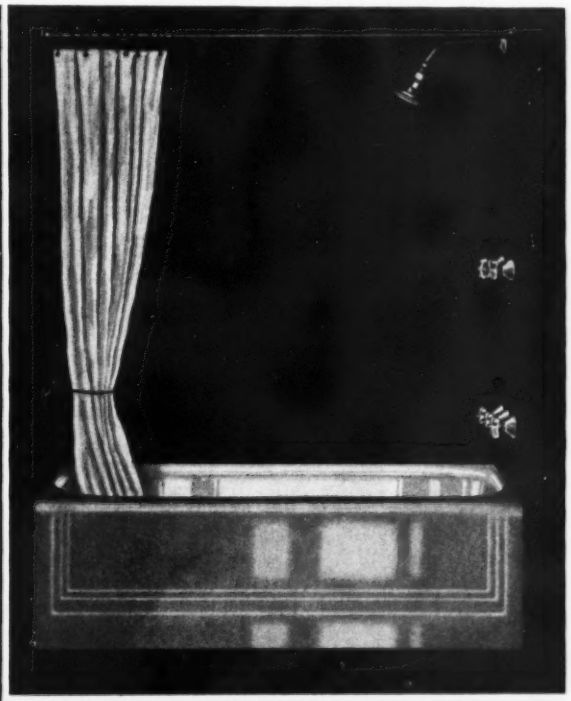
It is often necessary to cancel certain vouchers which have been made out and entered in the voucher register. Examples of such occasions would be where goods are returned or where it was found inconvenient to meet the payment as vouchered and a note or notes were given creditors. In cases of this kind the original voucher must be cancelled and the amount deducted from the amount entered in vouchers columns and the distribution columns. This may be accomplished in two ways:

1. By showing the date in the cancellation column and by making a red ink entry on the same line with the original record of the voucher, the red figures being considered deductions at the time the columns are totaled.

2. By making no entry in the voucher register ex-

Here is a Bathroom Ensemble *Modern in Design—Modest in Price*

PEMBROKE *NEO-CLASSIC* BATH WITH SHOWER P-2315-B



In the Pembroke *NEO-CLASSIC* bath with shower, the Clyde lavatory and Moderno closet, you have a bathroom ensemble strictly modern in design, surprisingly moderate in price. With this group you can meet the demands for modern beauty in popular-priced installations because it costs no more.

Why not show your customers this distinctive ensemble. Point out the classic lines of the Pembroke *NEO-CLASSIC* bath, the attractiveness of the Clyde lavatory and distinctive design of the Moderno closet. Each reflects the modern motif—together they harmonize to bring a delightful new tone to the bathroom.

With this ensemble, it is no longer necessary to sacrifice modern beauty to meet the moderate budget. You can give quality and modernity at a price your customers will be glad to pay.

Displaying these units as a group is the first step in selling them as an ensemble. Write today for the "Standard" plan of selling to old homes on convenient payments.

Standard Sanitary Mfg. Co.
PITTSBURGH, PA.
Division of AMERICAN RADIATOR & STANDARD SANITARY CORPORATION

"Standard" PLUMBING FIXTURES

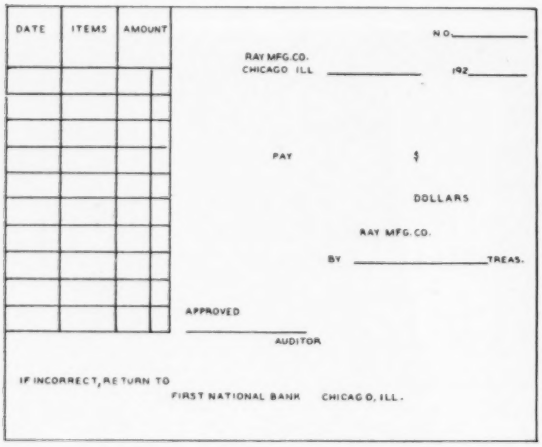
MODERNO WASHDOWN COMBINATION F-2197

CLYDE ENAMELED LAVATORY P-3127-G

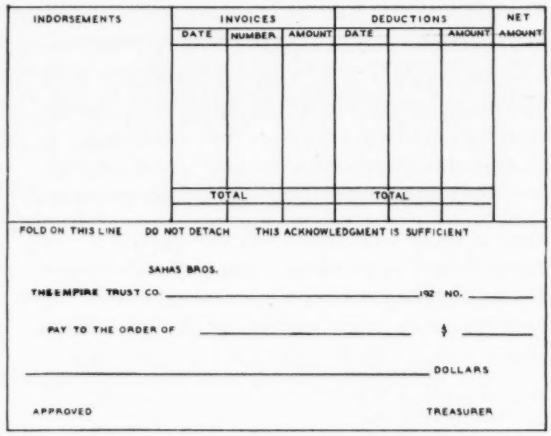
cept that of showing the date in the cancellation column, the original entry giving the reason for the cancellation's being made in the general journal.

Purchase Returns and Allowances

If the goods can be inspected and accepted, or adjustment secured when necessary, before the voucher for the transaction is made up, then the amount to be paid is always the amount of the voucher and no change need be made in the amounts entered and distributed on the voucher register. Where this is done a "Purchase Returns and Allowances" account is not required. This procedure, however, is not always possible, for a first inspection does not always show the true condition of goods. Adjustment of the general ledger accounts could be made by entry of the return or allowance through the general journal. That would not, however, leave any indication in the voucher register record of the fact that cancellation of the liability there shown was made by payment of a lesser amount than the one entered, and it is desirable that these two amounts be the same.



A single voucher check



This voucher check is about double the usual size of checks and is to be folded lengthwise

To accomplish this, entry of the allowance should be made, in small red ink figures on the upper part of the line just below the vouchers affected, entering in red the voucher number—the same as the voucher to which it applies—and the amount of the allowance, both in the "Vouchers Payable" column and the distributive columns affected by the allowance. These red ink items are, of course, deductions, the summary amounts of the various columns being net totals, i. e., the totals of regular items less the red figures; or two totals may be shown, one above the other, the regular and the red. Where both black and red totals are shown, both must be posted, the red as offsets to their corresponding black postings. If desired, separate Purchase and Allowances Accounts may be opened.

Partial Payments

The whole voucher system is built on the idea that each voucher is the unit according to which the record is kept. It, therefore, presupposes settlement in full of each voucher; otherwise, the efficient operation of the system is interfered with. Settlement in full is not always possible, however. Since provision is made in the voucher register for but one line on which to show payment of the voucher, it is not possible to indicate partial payments in the allotted space, nor would such practice be desirable.

Where partial payments are to be made, the original voucher must be cancelled in full and two new vouchers issued in place of it—the one for the amount of the partial payment, which will thus cancel it, and the other for the unpaid balance, which will remain open until paid in full or till other partial payment is made. In the latter case the same procedure of cancellation and issuance in its stead of two vouchers must be repeated. This process of cancellation by the re-issue of two new vouchers may be effected directly on the face of the voucher register by a full cross-reference between the old and the new, usually shown in the "Manner of Payment" column; or it may be done by entry on the general journal, which will then constitute the authority for the transaction.

Handling of Notes Payable

If a note is given or a draft accepted upon the purchase of goods, the liability for it will appear on the books only as a note liability, provided the purchase is recorded through some other medium than the voucher register. This medium might be the general journal or the notes payable journal. If, however, original entry of the purchase is made in the voucher register, liability for it is thereby created under the account title, "Vouchers Payable." This must be shown canceled by the creation of a note liability in its place, by entry in the general or notes payable journals. If the voucher system is used, the check on the original voucher must be canceled by marking it "void," or by running it through the bank with the day's deposits. In either case, for the sake of a complete record of check numbers, it should be entered among the cash disbursements. From all this it is evident that less work is entailed and just as complete a record made by entering the purchase originally in general or notes payable journal as suggested above.

Summary of Voucher System Advantages

The operations and advantages may be briefly summed up as follows: **(Continued on Page 131)**

SUPPLY NEWS

AMONG MANUFACTURERS, WHOLESALERS AND SALESMEN

Chicago Nipple Mfg. Co. Appoints New Plant Manager

Chicago Nipple Mfg. Co., Chicago, announces that John W. Stiles has been made manager of its Baltimore plant. Mr. Stiles has represented this company in New England and Central Eastern territory for the past 15 years from Syracuse, N. Y., but hereafter will headquarter at Baltimore.

Mr. Stiles' son, J. R. Stiles, has been placed in charge of Ohio, West Virginia, western Pennsylvania and western New York, and will make his headquarters at Cleveland, Ohio.

◆

Officers of Newly Organized Foran Boiler Co. Are Announced

The Foran Boiler Co., which was recently organized at Flemington, N. J., to manufacture heating boilers, has announced the appointment of the following officers: Arthur F. Foran, president; H. G. Shields, treasurer; John F. Schenk, vice president and secretary; Oscar Thomsen, plant manager, and W. A. Wills, general manager.

◆

Merges With Subsidiary of Link-Belt Co.

The merger of the George W. Moore Co. of Chicago, with H. W. Caldwell & Son Co., a subsidiary of Link-Belt Co., is announced by Alfred Kauffmann, president, Link-Belt Co. The combined units are to be known as The Caldwell-Moore Division, Link-Belt Co.

Max H. Hurd, formerly president of the George W. Moore Co., becomes a vice president of Link-Belt Co., in charge of the Caldwell-Moore operations. His headquarters will be at 2410 W. 18th street, Chicago.

◆

Moves Minneapolis Sales Offie

The L. J. Mueller Furnace Co., Milwaukee, Wis., has moved its Minneapolis, Minn., sales office from 631 3rd Avenue South to new quarters at 715 South Eighth Street.

◆

Declares Regular and Extra Dividends

The Silent Glow Oil Burner Corp., Hartford, Conn., at a recent directors' meeting, declared the regular quarterly dividend of 2½ per cent and an extra dividend of 2½ per cent. Regular dividends were also declared on preferred stock.

◆

Butler Mfg. Co. Acquires New Lines

The Butler Mfg. Co., of Kansas City, Mo., has acquired the exclusive license to manufacture and sell the coal stoking device formerly manufactured by the Cross Coal-O-Matic Co., also of Kansas City. The Butler Mfg. Co.'s plant at 7400 East 13th street makes possible production on an increased scale. Walter M. Cross, Jr., the son of the founder of the Cross-O-Matic Co., has joined the Butler organization and the Coal-O-Matic factory has been moved to the Butler plant.

In addition to the above acquisition, the Butler Mfg. Co. also recently purchased at a receiver's sale the line of medicine cabinets and gas-fired incinerators of the Welded Products Corp., of Kansas City, and will in the future manufacture and sell these products.

◆

Sloan Valve Co. Moves Detroit Office

Sloan Valve Company of Chicago has moved its Detroit, Mich., office to 14 Smith street. E. J. Anderson is in charge of the company's Detroit office.

◆

Officers of Timken Silent Automatic Co. are Announced

As announced in these columns in the preceding issue, the Timken-Detroit Co. and the Silent Automatic Corp., oil burner manufacturers, both of Detroit, Mich., will consolidate on January 1, 1932. The new concern will be known as the Timken Silent Automatic Co.

Active management of the Timken Silent Automatic Co. will be vested in Fred Glover, president; Haldeman Finnie, vice president and general manager; J. L. O'Brien, assistant to the general manager; W. C. Wood, secretary and treasurer; E. V. Walsh, general sales manager; R. S. Beale, sales manager, wholesale division; T. A. Crawford, advertising and sales promotion manager; F. O. Cole, general service manager; F. M. Jordan, assistant general service manager; M. A. Powers, chief engineer; and R. W. Beckett, assistant chief engineer.

Walter F. Tant, president and Karl B. Segall, vice

president of the Silent Automatic Corp., will both retain a substantial financial interest in the new company and will assist in shaping policies in their respective departments, sales and engineering.

◆

Desolvo Mfg. Co. Is Organized

J. R. Dulaney has taken over the sales rights of the cleaning compound of the Chamberlain Co., Pittsburgh, Pa. The new company will be known as the Desolvo Mfg. Co., with offices at 33 Terminal Way, Pittsburgh.

◆

General Electric Co. Reports on Business for First Nine Months

Orders received by the General Electric Co., Schenectady, N. Y., for the first nine months of 1931 amounted to $202,700,016, compared with $267,651,832 for the corresponding period last year, Gerard Swope, president of the company, announced recently.

Sales billed for the nine months of 1931 amounted to $206,138,967.01, compared with $287,886,541.05 for the corresponding period last year.

Profits available for dividends on common stock for the first nine months of 1931 was $30,753,850.14, compared with $42,518,708.56 for the first nine months last year.

◆

Death of Louis C. Corbus

Louis C. Corbus, purchasing agent for Standard Sanitary Mfg. Co., Pittsburgh, Pa., died October 14 at the Pittsburgh Athletic club of pneumonia. He was in his 57th year. Mr. Corbus had been sick only three days. He had been connected with the Standard Sanitary Mfg. Co. for many years and was very well known throughout the trade. He was a graduate of Geneva College, a charter member of the Pittsburgh Athletic club, a member of the Union League club of Pittsburgh and other local organizations. For many years he served on the library committee of the athletic club.

◆

Officials of A. O. B. A. Discuss Convention Plans; Hear Committee Reports

The executive committee of the American Oil Burner Association met at Detroit, Mich., on October 12 and the members of the board of directors assembled on the following day to discuss plans for the forthcoming annual convention and show and to hear reports of the various committees. The convention and show, which will be held in Boston, Mass., April 11-16, 1932, will be the association's ninth annual gathering. Because of the problem of ventilation and heat dissipation in the Exhibit hall and also because of the limited amount of chimney capacity available, the directors at their meeting adopted a set of regulations relating to the demonstration of burners under operation conditions.

The general trade practices committee reported that a large number of replies had been received from the industry with reference to the proposed code that was distributed to the membership recently. A substantial number of these replies indicated acceptance of the proposed revised code. Many of the replies contained constructive suggestions and it was decided to refer the proposed code back to the committee in order that a thorough review might be made of these suggestions with a view to incorporating them in the code if desirable.

The technical research committee reported on the work that is now being carried on at Yale University. The committee also recommended that the engineering departments of member companies co-operate with the committee to the end that there may be brought about a uniform method of determining boiler load.

The market research committee reported that it was co-operating with headquarters in making a study of the potential market for oil burners. Both the uniform ordinance committee and the committee on co-operation with insurance companies made extensive reports.

The dealer division activities were reported on and the by-laws for this division were approved by the board. By-laws for the organization of the manufacturer division were also approved by the board and these by-laws will be submitted to the manufacturer members for acceptance.

The board recommended that the by-laws be amended so as to combine the activities of the uniform ordinance committee, the committee on co-operation with the underwriters' laboratories and the committee on co-operation with insurance companies; these combined activities to be under one chairman with the individual subject matter to be studied by sub-committees.

The board approved an amendment to the Model Ordinance as follows: First sentence of Section VII, paragraph 1, to read: *"Storage* tanks *connected to oil burners* shall be constructed, etc., etc." (The new words added are in italic.)

The table in Section VII, paragraph 1, to be amended as follows: "20 to 100 gallons—16 gauge. 101 to 285 gallons—14 gauge, etc., etc."

These two changes, it is felt, eliminate the possibility of the use of small tanks being interfered with through improper interpretation of these rules.

◆

W. T. G. A. Sets Date for Annual Meeting

Members of the Western Trade Golf Association will gather at the Bismarck hotel, in Chicago, on November 19 for their annual meeting. Dinner will be served at 6:30 p. m., and at the business meeting which will follow new officers for the 1932 season will be elected.

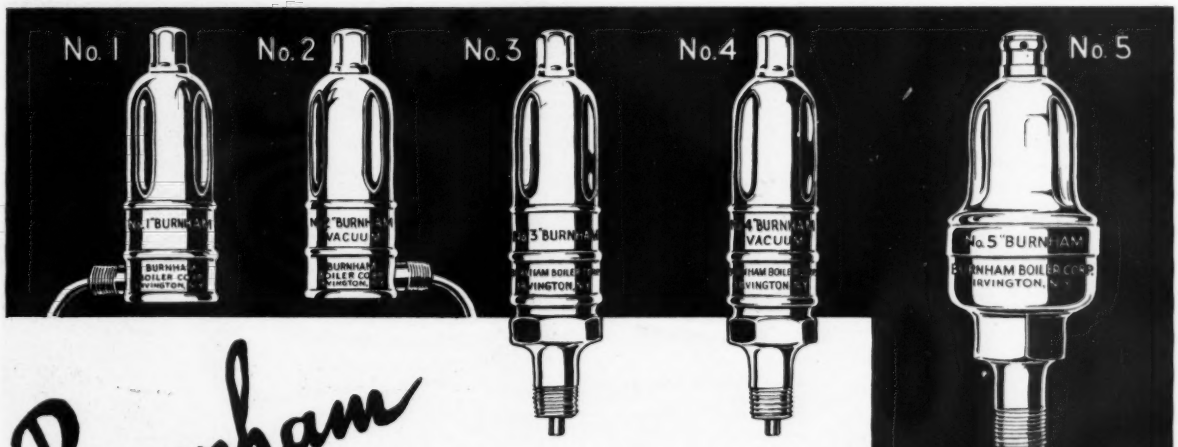
◆

St. Louis Chapter Holds October Meeting

The October meeting of the St. Louis Chapter, A. S. H. V. E., was held October 14, at the Roosevelt Hotel, preceded as usual by a dinner.

The meeting was called to order by President R. M. Rosebrough, who advised that due to the large number of guests, the usual order of business would be postponed.

President Rosebrough introduced Willis H. Carrier, National president. Mr. Carrier delivered a paper entitled "Servicing the Human Power Plant," illustrated with lantern slides. Mr. Carrier's address was greatly appreciated by those present. After closing his talk he answered many questions pertaining to air conditioning. There were 62 members and guests present at the meeting, including many members of the refrigerating society.



Burnham VALVES

Here's Good News About a New Valve Line

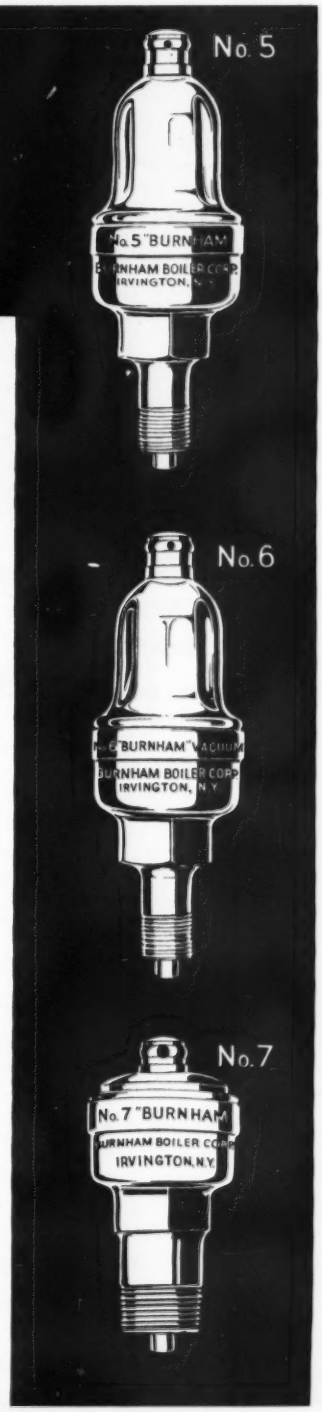
HERE'S A COMPLETE new line of seven valves. New to you. But old to us. Old, in that they have been given long and thorough tests.

The years of study—work—experiment—testing are over now. The Valves have passed their examinations and have graduated with high honors.

A complete line of seven Burnham Valves are yours at last. Good to look at. Practical. Hardy. Priced right. VALVES WE CAN PUT THE BURNHAM NAME ON. Valves we GUARANTEE FOR FIVE LONG YEARS.

Here they are — Seven of them

1. Air Valves. Let the air out of the radiator only.
2. Vacuum Valves. Let out the air and keep it out.
3. Quick Vent Air Valves. ¼-inch bottom outlet. For Mains, Coils and Risers. Close against water.
4. Quick Vent Vacuum Valves. ¼-inch bottom outlet. For Mains, Coils and Risers. Close against water.
5. Quick Vent Air Valves. ⅜-inch bottom outlet. Close against water.
6. Quick Vent Vacuum Air Valves. ⅜-inch bottom outlet. For Mains. Close against water.
7. Quick Vent for Mains. ¾-inch bottom outlet. Not guaranteed to close against water.

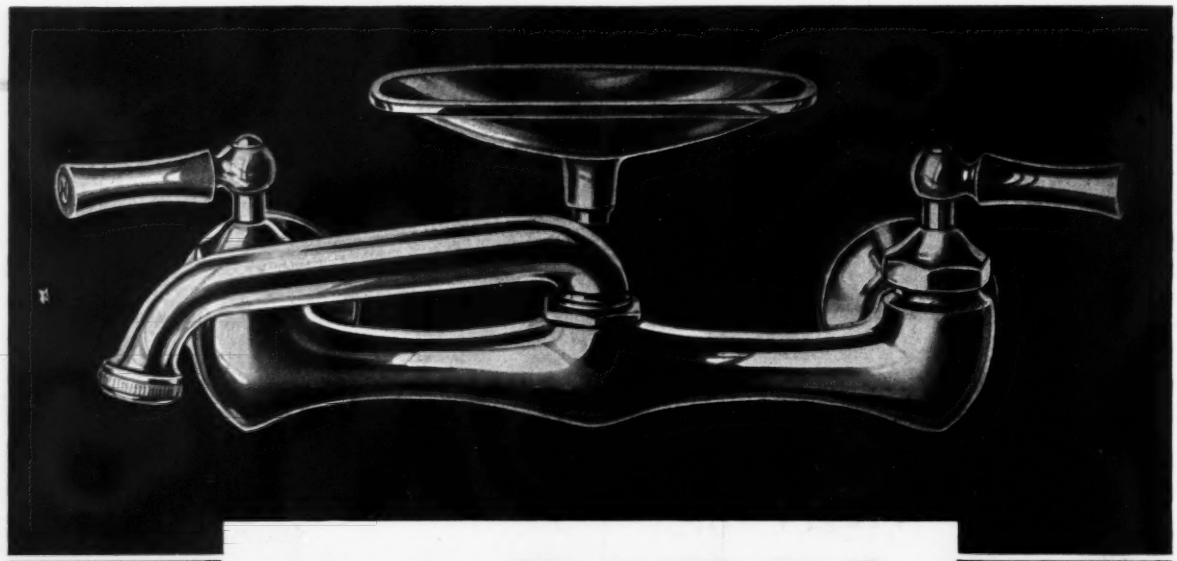


This line is just another powerful sales help we're sending along to you. We are doing our part. All right, you do yours. Send for pictures, descriptions and prices, and get the profits.

Burnham Boiler Corporation

IRVINGTON, NEW YORK

Representatives in all principal cities of the United States and Canada



CAPITOL 910 SINK FIXTURE

For homes where only the best will do, or where the housewife takes a particular pride in dressing up her kitchen, this Capitol Sink Fixture is, we believe, the handsomest and finest-built fixture anywhere obtainable.

Chrome-plated throughout, the soap dish and handles are also of metal. Or, at your option, china soap dish and china handles can be furnished.

Eight-inch centers with either female eccentric or male adjustable couplings. Especially suited to the new, low-backed sinks.

Made in plants where precision workmanship is the only kind tolerated, this fixture is as finely made as the most modern industrial methods enable. It is an aristocrat in its field.

The better plumbing supply houses throughout the country display and furnish Capitol fixtures.

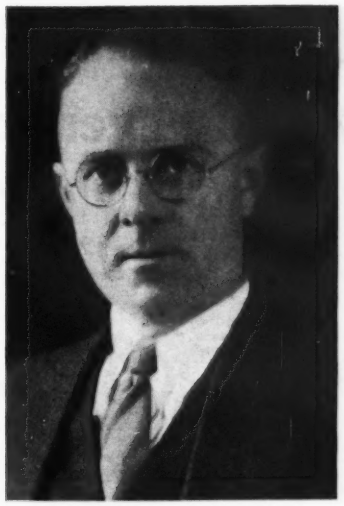
Bohn Aluminum & Brass Corporation

CAPITOL BRASS DIVISION

MANUFACTURERS OF BRASS VALVES, BOILER TRIMMINGS AND PLUMBERS' BRASS GOODS

DETROIT~MICHIGAN

Thomas H. Powers Heads Eastern Wholesalers



Thomas H. Powers

THOMAS H. POWERS of the Salem Brass & Iron Mfg. Co., Bridgeton, N. J., was elected president of the Eastern Supply Association succeeding Leo M. O'Neil of the M. O'Neil Supply Co., Brooklyn, N. Y., at the two day session of the Association held at the Hotel Astor, New York City, Oct. 14th and 15th. W. F. Bennett Jr., of the Ideal Supply Co., Somerville, Mass., was elected first vice president and J. M. Chaplain, John Simmons Co., New York, N. Y., was given the office of second vice president. Frank S. Hanley was re-elected secretary-treasurer.

A resolution changing the constitution so that the board of directors consists of fifteen members instead of eleven resulted in the appointment of five new members to that body. They are: Charles Millar of Millar & Son Co., Utica, N. Y.; G. P. Cartwright of S. S. Fretz, Jr., & Co., Philadelphia, Pa.; H.T. Richardson of Richardson & Boynton Co., New York City; Claude W. Owen of E. G. Schafer Co., Inc., Washington, D. C., and George E. Trudel of Geo. E. Trudel Co., Manchester, N. H. The others members of the board are: J. J. Crotty, vice president of Central Foundry Co., New York City; A. M. Behrer of Behrer & Co., Inc.; W. A. Brecht, Hajoca Corp., Philadelphia, Pa.; George E. Hoffman of Crane Co., Chicago, Ill.; L. U. Noland of Noland Co., Newport News, Va.; J. F. Sheppard of The C. S. Mersick & Co., New Haven, Conn.; Edward Smolka of E. Smolka Plbg. Supply Co., New York City, and of course the three newly elected officers. J. P. McPhail of The James Robertson Mfg. Co., Baltimore, Md., was named national counselor at the United States Chamber of Commerce.

With a larger attendance than even the most optimistic had hoped would gather the meeting was called to order by President O'Neil. He welcomed them and thanked them for their co-operation with the Association during his term of office. Secretary Hanley presented the names of applicants for membership. These consisted of eight in all, namely; Erskine Copper Radiator Corp., New York City; Fretz-Moon Tube Co., Inc., Butler, Pa.; International Nickel Co., New York City; Lycoming Supply Co., Williamsport, Pa.; Mamaroneck Plumbing Supply Co., Inc., Mamaroneck, N. Y.; Pennsylvania Range Boiler Co., Philadelphia, Pa., and the T. J. Lee Co., Inc., Irvington, N. J. These applicants having already been accepted by the board, they were also accepted by the meeting without reservation.

The fifty-sixth credit bureau summary as offered by Secretary Hanley showed that to the end of September, 20,371 claims totaling $3,503,918 had been filed. Due to the activity of the bureau, $2,684,162 in claims had been settled. This is quite a remarkable record considering that although claims increased 3% the percentage of settlements was approximately 76.6%. In the interchange Credit Dept., 8,334 credit surveys were made.

The members were gratified to hear the treasurer's report which showed that the financial condition of the organization was in excellent condition.

Dr. Stephen I. Miller, noted economist, then addressed the meeting. Following his talk, Charles M. Schwab, chairman of the board of The Bethlehem Steel Corp., Bethlehem, Pa., was introduced. Mr. Schwab's talk was accepted with great enthusiasm and deep appreciation.

The Members' Goodfellowship luncheon provided a brief period of relaxation before the afternoon session was called to order. This was attended by member wholesalers only and they were presented with a discourse on "Direct Selling," by J. W. Singmaster, Lehigh Valley Supply Co., Allentown, Pa.

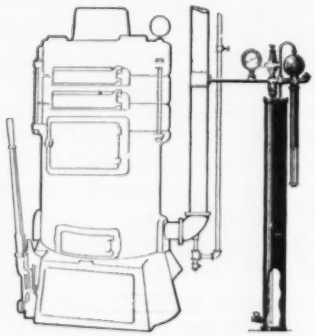
The meeting on the following day heard J. P. Day, New York real estate operator, who described the advantages of "Own-Your-Own-Home" Clubs. They also heard the following members on the following subjects: Harry Booth, U. S. Radiator Co., Detroit, Mich., Boilers and Radiators; Harry Speakman, Speakman Co., Wilmington, Del., Brass Goods; Herbert Kohler, Kohler Co., Kohler, Wis., Enameled Ware; George Denney, National Fittings Mfgs. Assn., Fittings; A. M. Maddock, Standard Sanitary Mfg. Co., Pittsburgh, Pottery; R. R. Rust, Somerville Iron Wks., Somerville, N. J., Soil Pipe and Fittings; and E. P. Corry, Youngstown Sheet & Tube Co., Youngstown, Ohio, Steel Pipe.

At this meeting too, D. L. Hamill of Buffalo, N. Y., a past president, was made an honorary member. No wholesalers reports were made.

You'll never go back to old-style heating *once you've tried*

VAPOR-VAC

AUTOMATIC-VAPORIZER
FOR
HOT WATER HEATING SYSTEMS



TAKES THE PLACE
OF EXPANSION TANK
OR PRESSURE SYSTEMS

GUARANTEED CURE FOR
"SICK-HOT WATER JOBS"

QUICK HEAT
SAVES FUEL
SPEEDS UP CIRCULATION

Start installing Vapor-Vac Now. Use them as your cold weather remodeling leader. Write us for complete details of this satisfaction giving, profit making heating item, that is putting new life into thousands of heating plants.

Order from your jobber

VAPOR-VAC MFG. CORP.
3952 North Lowell Ave.
Chicago, Ill.

Business Personals

GEORGE E. TOTTEN has been appointed manager of sales of the Tin Plate Division of Republic Steel Corp., with headquarters in the general offices of the corporation in Youngstown, Ohio, according to an announcement by N. J. Clarke, vice president in charge of sales.

C. B. Nash

CHARLES B. NASH, director of publicity of the American Radiator & Standard Sanitary Corp., New York City, has been appointed director of purchases for the Emergency Unemployment Relief Committee for New York. JOHN E. KING, assistant treasurer of American Radiator Co., and ALBERT K. ROOT, vice president of the accessories division of the company, are also serving on the committee as volunteer speakers.

FRANCIS D. WEST, after serving as manager of sales for the Paradon Co. for nearly two years, has returned to the Permutit Co., of New York City, as district sales manager. He will maintain headquarters at 712 Brisbane building, Buffalo, N. Y. Mr. West was associated with the Permutit Co. from 1918 until 1930, and has had a broad experience in the treatment of industrial water supplies. His return to the Permutit Co. is effective as of October 1.

W. E. PRICE, president and general manager of the Knapp Supply Co., Muncie, Ind., has been selected by Governor Leslie of Indiana to head the unemployment relief program in that state. He will work directly with Dr. John H. Hewitt, secretary of Governor Leslie's unemployment commission. Mr. Price was active in promoting a work campaign in Muncie a few months ago that gained wide publicity. The plan is one of encouraging home owners to extend improvement and construction work.

JACK SHARKEY, formerly with the Montgomery Plumbing Supply Co., Jersey City, N. J., has joined the Lincoln Plumbing Supply Co., also of Jersey City.

JAMES BYRNE, New York manager of J. B. Wise, Inc., Watertown, N. J., was married on October 17th. Mr. and Mrs. Byrne are enjoying their honeymoon on a tour through New England.

◆

Says America's Industrial Growth Will Follow Natural Gas Lines

The industrial growth of America in the future will follow the system of natural gas pipe lines which has developed during the past decade, according to John J. Bergen, authority on natural gas securities, speaking at a meeting in New York City. "Before the invention of the steam engine, all industry was located along waterways, where water power was available," said Mr. Bergen. "With the advent of the steam engine, industry settled in localities within easy transportation distance from the coal mines. The industrial development of

England resulted from its large resources of coal and steel, and its loss of industrial leadership followed the development of similar resources in America and Germany.

"Industry gravitates toward districts where low power costs are available, and it is natural to expect that the industrial development of the next half century in the United States will follow the natural gas pipe lines where fuel costs are lowest," continued Mr. Bergen. "The glass industry in northern Ohio has risen to its present position of supremacy because of an abundant supply of natural gas. Forty years ago a New England glass manufacturer moved his plant from Massachusetts to Toledo, Ohio, to take advantage of the low fuel costs of natural gas. Other glass companies followed this move. The industrial map of the United States will be greatly changed by the introduction of this new source of fuel."

Says Mergers Promote Business Welfare

OUTLINING a broad general platform for business and dealing specifically with four aspects of the current economic situation, Dr. Stephen I. Miller, executive manager of the National Association of Credit Men, opened the thirty-sixth annual Convention and the Credit Congress of Industry of the Association at the Hotel Statler, Boston, Mass., before fifteen hundred credit executives from all parts of the nation, with a keynote address entitled, "The New Frontiers of Credit."

The credit chief affirmed a need for optimism today by saying that "there is a strong argument in recognizing psychology as a major force at this time in the business depression. Optimism now is particularly opportune at a time when the nation is fortified with a volume of elastic credit and at a period when personal and business liquidation have run their course." He expressed the belief that mergers are the greatest force in the elimination of waste and the promotion of business welfare, and said that the Sherman-Clayton acts should be modified to allow legitimate economies and better business administration because "business cannot be administered in anticipation of adverse court decisions."

Then, following a plea for co-operation instead of foolhardy individualism in the American business structure, Dr. Miller took to task the talkative business leaders and "a certain type of college professors of economics" who have been making predictions and analyses that have not been realized for almost two years.

"There is no one more individualistic than an economist," said the keynote speaker. "At the present time much unfavorable comment has been let loose against predictions and analyses by a certain type of college professors of economics. Probably much of this reaction is due to an attempt to make economics more abstract and more scientific than can be justified.

"They are making too much of comparisons of price cycles, without regard to the complexity of industry and numerous factors that are constantly changing. It is dangerous to anticipate a general price cycle in terms of the nineteenth century, because there have been too many changes in the past few decades. Consumer habits, distribution, credit elasticity—all these have been altered to a vast degree. As a result of failure to give consideration to these forces we have had all manner of strange predictions and today we hear some say that this depression will extend for another twenty or thirty years."

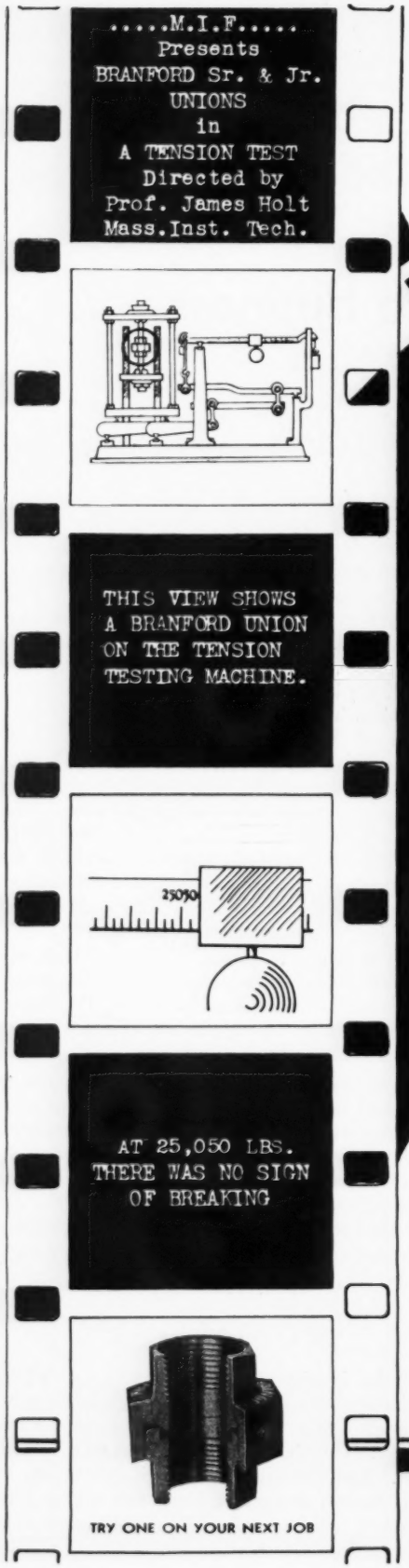
On the subject of mergers, Dr. Miller said "that business consolidation is capable of bringing about widespread economies in the use of land, capital, and labor, in the buying of stock and materials, and in the marketing of products, has long since been recognized. That business mergers can become one of the greatest contributors to industrial stability is not so fully appreciated." But the speaker emphasized the statement that the ultimate test of the business merger will be found in an ethical rather than in an economic interpretation.

"The people of the United States have learned that cut-throat competition brings neither service nor lasting low prices; that the economies resulting from vast production and distribution make possible lower prices; that the ownership of a corporation is not in the hands of a few captains of industry, but is generally lodged in the hands of thousands of stockholders; and that the welfare of the great industrial units is a necessary part of the prosperity within the entire economic system.

Commenting on the plan of the congress, which will bring industrial leaders together in individual group sessions for discussion of common problems, Dr. Miller praised the co-operation among the American business men that makes such meetings possible.

"In the old frontier days, individualism and courage and ingenuity and initiative were necessary to cope with the problems and dangers of the new world. However, when special problems arose and dangers became so great that individuals were no longer able to combat them alone, co-operation was highly desirable as a defense against the common foe. The analogy to business is direct. The same attributes of individualism, courage, ingenuity, initiative, necessary in frontier days, are as vitally important today, for business men are confronted with trials and problems too great to be settled by one person acting alone.

"If we persist in the extreme individualism which prompts business men to maintain stubbornly an independent policy, too many will and must fall before the mass power of the evils in the present economic situation. The only sane and effective type of individualism is that which is strong enough to bind men together in intelligent and determined effort to fight a common foe."



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Mechanical Unit at University of Wisconsin to Help Research

The completion recently of the new Mechanical Engineering building at the University of Wisconsin, Madison, not only improves the teaching facilities of the college and encourages research work, but also makes it possible to enter into the more extensive research projects, department executives declare.

"It furnishes an excellent laboratory where engineering data can be obtained," said Professor Gustus L. Larson, chairman of the mechanical engineering course.

The building, for which the legislature appropriated $577,000 in 1927, was constructed around the old Randall shops which were erected in 1920. The building is the first unit of a new engineering campus which, when completed, will embrace eight or nine separate units. It is a step forward in the plans of Glenn Frank, president, and F. E. Turneaure, dean, for modernization of equipment necessary to place the college on a more adequate research basis.

Heating, Ventilating and Refrigerating Laboratory

The heating, ventilating and refrigerating laboratory will be located in the rear portion of what used to be Randall shop. This furnishes a good solid floor for moving heavy equipment such as brick or concrete wall sections which are used in connection with the test work on "The Infiltration of Air into Buildings." Fan testing, air measurement, heat transmission, and refrigeration experimental and test work will also be carried on in this laboratory. The increase in space for carrying on work in this branch of mechanical engineering will enable the University of Wisconsin to take part in the establishment of test codes and standards for all heating, ventilating and refrigeration equipment.

In addition to the heating and ventilating apparatus in this laboratory, the heating system of the building will be used for practical studies. A variety of systems and combinations of heating and ventilating equipment have been installed in different parts of the building.

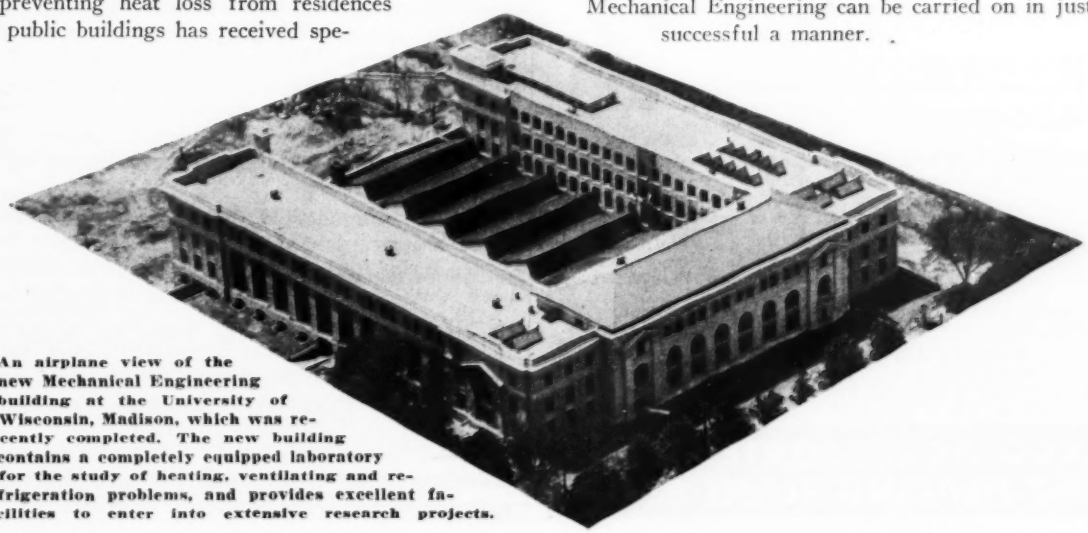
Co-operative Research

The matter of decreasing fuel bills by finding the ways of preventing heat loss from residences and public buildings has received special attention by the Department of Steam and Gas Engineering.

During cold and windy weather, a large amount of heat is carried away from a building by the air that leaks in on one side and out the other side of the building. Certain types of construction are much more effective than others in the matter of reducing the quantity of heat lost in this manner.

During the past four years, in co-operation with the American Society of Heating and Ventilating Engineers, a study has been made of the problem of air infiltration or leakage through buildings. The lack of space for such work has seriously hampered the progress of this investigation. Even so, many phases of the subject have been investigated and the data made available to architects and others interested in building construction. Complete studies have been made upon the infiltration of air through masonry walls, through wood frame walls and through double-hung wood windows. A total of nine masonry wall sections have been built and tested under various conditions. The wood-frame wall sections were built and tested in steps so that the effect of adding each layer to the construction would be known. Over forty variations of walls were studied for air infiltration. The most recently completed program was that covering the leakage through both plain and weatherstripped double hung wood windows when fitted with various clearances.

The above projects were carried on in a laboratory with the aid of testing equipment for exerting a pressure against the window or wall section. In order to find the relation of these laboratory results to the variable conditions in buildings, experiments are being made as to the behavior of air movements into and out of actual buildings. One study is on the variation of the ventilation with open windows under the influence of variable winds. Another phase yet to be investigated is the influence of a positive means of ventilation, such as a central fan system or unit ventilators on the air leakage around building openings. Still another subject to be investigated is the effectiveness and the development of a method for rating roof ventilators. With the increased facilities that this new building offers, it is hoped that these projects and many others in all branches of Mechanical Engineering can be carried on in just as successful a manner.



An airplane view of the new Mechanical Engineering building at the University of Wisconsin, Madison, which was recently completed. The new building contains a completely equipped laboratory for the study of heating, ventilating and refrigeration problems, and provides excellent facilities to enter into extensive research projects.

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ARCO ACCESSORIES MAKE ANY HEATING PLANT BETTER

Air Conditioning's Future Is Big, Says Survey

"Weather manufacture," the newest infant industry, is now requiring upwards of 3,000,000 pounds of copper annually for construction of necessary apparatus, according to a survey of the air conditioning field just completed by the Copper & Brass Research Association. Development of this field is only in its initial stages, the survey says, with a tremendous potential market ahead and also a correspondingly large prospective outlet for copper in the production of appliances.

"Air conditioning," the survey continues, "has recently passed beyond the stage of industrial acceptance alone. In the past three years it has made rapid strides in the field of theatres and department stores. It is now being introduced in hotels, public buildings, commercial shops, and office buildings and is being adapted to railroad cars.

"Its next forward step, and largest potential market, will be in private residences. Leading heating and ventilating engineers look to a day perhaps within five or ten years when it will be as common to provide cooling in summer and year-round control of humidity in homes as it is to provide winter heating today. It is in the residence and apartment field that the largest potential market for the use of copper and brass is expected.

"Year-round air conditioning and cooling systems are expected to supplant present winter heating systems to the extent that electric and gas refrigerators have succeeded ordinary ice boxes.

"In the industrial field it is estimated that about 3,250 plants in some 200 industries are equipped with modern air conditioning. In the field of human comfort there are over 400 buildings that have installed large central-station systems. The number of unit conditioners and smaller systems for individual offices and homes have reached several thousand. Smaller air washers and humidifiers operating either independently or in conjunction with furnaces are in excess of 25,000.

"About 300 theatres are already equipped with air conditioning apparatus. Of the 14,000 theatres in the United States, at least 2,500 are deemed sufficiently large to warrant installation of complete air conditioning apparatus, and among the other 11,500 there is a large potential field for the sale of unit conditioners. So far, about 25 installations have been made in large department stores, and this field is believed to offer a large potential market. There are from 75 to 100 retail stores now having air conditioning installations.

"In the railroad field the Baltimore & Ohio has taken a forward step with several completely air-cooled trains. About 30 of the company's cars have been thus equipped and others are being added weekly at present.

"All of the air conditioning systems now installed in theatres, buildings, trains, and even in certain industries," concludes the Copper & Brass survey, "constitute an invaluable advertising force for the air conditioning industry. Public acceptance for residence systems will come through daily contact with the larger systems already installed."

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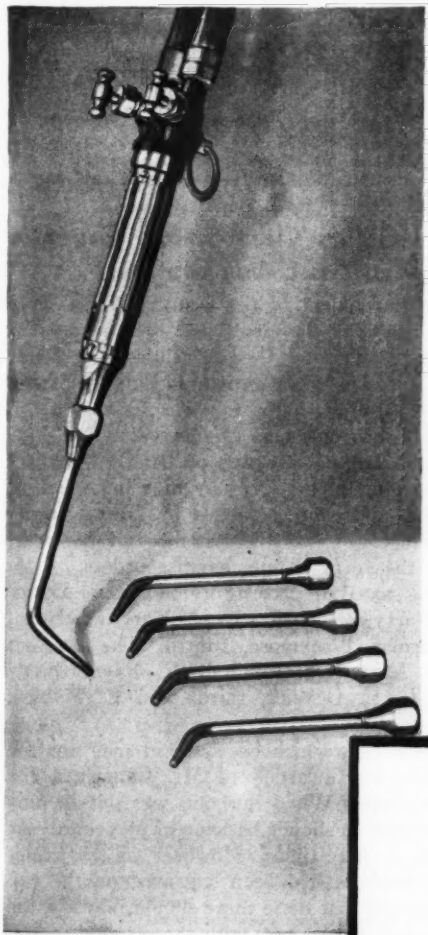


Every day, more and more sheet metal articles are being built or repaired by oxwelding. A single blowpipe capable of welding any gauge of sheet is now necessary equipment in every shop.

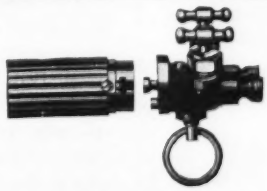
The Prest-O-Weld Type W-106 Blowpipe for automobile repair and sheet metal production shops is built to give just the right gas mixture for light welding, brazing, and soldering. With its five standard tips, which can be set at any angle for vertical or overhead welding, you can make clean strong joints in all ordinary thicknesses of sheet metal. A quick-acting ball type joint makes changing tips a matter of only a few seconds, with no wrench necessary. By adding an inexpensive stem tip adaptor, you can attach Type W-107 Aircraft Blowpipe Tips for extremely light gauge metal. Like all new-type Prest-O-Weld Blowpipes, the W-106 is easy to handle, rugged enough to stand up under rough usage, and extremely low in gas consumption.

Ask your jobber to show you the many advantages of the Prest-O-Weld Type W-106 Welding Blowpipe.

Prest-O-Weld Type W-106 Welding Blowpipe complete with five tips, Nos. 3 to 7 inclusive, lighter and wrench, $21.00

Prest-O-Weld Type W-106 handle assembly, with tips, lighter and wrench (same as above but without Detachable Valve Body) $14.00

Prices slightly higher west of the Rocky Mountains.



PREST-O-WELD DETACHABLE VALVE BODY

The Prest-O-Weld Detachable Valve Body is one of the features of the W-106 and all other new-type Prest-O-Weld Welding Blowpipes. It enables you to substitute a larger welding blowpipe or a cutting blowpipe in ten seconds without disconnecting the hose.

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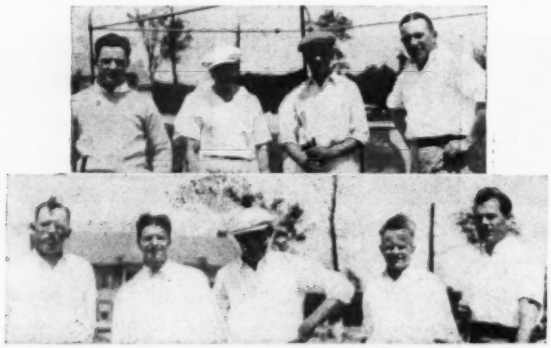
Trade Golf Events

Northern Ohio Trade Golfers Close Season

The Northern Ohio Trade Golf Association held its last tournament of the season at the Sleepy Hollow Country Club on Thursday, October 15. Jack Siefert was host and a good-sized crowd turned out for the meet. Lunch and dinner were served in the grill. After dinner President Samuel Wolff turned the meeting over to Frank Murphy who called on several guests and members for short talks.

The following received prizes for the day's play: M. L. Ondo, first low gross; A. H. Craig, second low gross;



Top row, left to right: B. R. Canny, Pittsburgh; R. W. Deeks and L. W. Schmidt, both of Cleveland; J. W. Edgett, Pittsburgh. Bottom row: M. C. McAfee, New Castle, Pa.; Norman Blackmore, Karl Gauerman, Harry Rowland and Ed. Berthet, all of Pittsburgh. Photos taken at joint meet between Central Trades Golf Association of Pittsburgh and Northern Ohio Trade Golf Association, held recently at Girard, Ohio

Jack Moore, third low gross; H. L. Fallon, first low net; P. D. Bowlan, second low net; Jack Siefert, third low net; A. Anderson, high gross. The prizes were distributed by Al. Fullerton.

Following are the individual scores:

	G.	H.	N.
Jack Siefert	92	21	71
Frank Murphy...	89	13	76
C. G. Medley....	106	18	88
R. P. Wettstein..	106	28	78
J. W. Cannon....	110	18	92
Jas. T. Duffy....	110	30	80
E. J. Newhouse..	118	35	83
Sam Garber	110	35	75
P. D. Bowlan....	100	30	70
Ray Deeks	103	30	73
G. R. Williamson.	118	35	83
M. L. Ondo.	77	..	77
F. M. Daugherty.	88	8	80
Jack Moore	91	16	75
A. H. Craig.....	87	8	79
F. B. Leslie.....	97	10	87
L. R. Oatey.....	116	30	86
A. Bream	119	30	89
A. Anderson	122	30	92
A. W. Fullerton.	114	30	84
H. L. Fallon.....	87	18	69
Dan Smith	109	33	76
Fred B. Allen...	117	35	82
Leonard Cutler .	118	35	83
Sam Wolff	111	26	85

◆

Miami Valley Trade Golfers Play Clovernook Club

The Miami Valley Trade Golf Association held its September tournament at the Clovernook Country Club, Cincinnati, Ohio, on the 29th of the month. A good-sized crowd was on hand for the meet and the day was a pleasant one. John Vogelpohl was host of the day.

The following received prizes: Fitzpatrick, first low net; Biedinghaus and Vogelpohl, second low net; Morner, third low net; Shildmiller, first low gross; Buxton, second low gross; Thomas, third low gross.

The association held its final tournament of the season at the Western Hills Country Club, Cincinnati, on October 26. A report on this will appear in our next issue. Following are the individual scores for the September tournament:

	G.	H.	N.
H. Mueller	98	22	76
Joe Biedinghaus.	101	28	73
L. Biedinghaus..	125	30	95
H. Biedinghaus..	87	17	70
Geo. Peck	86	16	70
Geo. Buxton ...	85	9	76
Bob Peck	87	10	77
Bill Thomas	86	8	78
O. Allonier	128	30	98
Ed. Richard	111	23	88
Chas. Teedor ...	105	24	81
Schildmiller	83	12	71
K. Fitzpatrick, Jr.	94	25	69
Howard Arnold..	88	15	73
Lee Lunday	92	9	83
Geo. Jones	127	30	97
John Vogelpohl..	96	26	70
Herman Heyde ..	116	30	86
Howard Chaplin.	118	25	93
Walter Mayme...	130	30	100
Roy Curry	108	30	78
H. J. Morner....	95	23	72
Ed. Klein	112	28	84
Don Jones	92	15	77
Ralph Jones	108	30	78
Pete Peterson ..	117	30	87
Walter Hair	87	8	79
Bailey Huleson..	91	19	72

◆

Central Trades Golfers Close Season; Gauerman Wins Association Cup

The October tournament of the Central Trades Golf Association, which was the final meet of the season, was held at the Edgewood County Club, near Pittsburgh, Pa., on October 20. Norman Blackmore of the Automatic Gas-Steam Radiator Co. was host.

The day was one of the best of the season for golf, and, as a result, a large crowd was on hand. Many arrived in the morning in time to play nine holes before lunch. The foursomes were arranged by Dazzy Vance, handicapper. Since this was the last meet of the year, prizes were in the form of merchandise orders.

The following received prizes for low gross: Dazzy Vance, first; Harry Rowland, second; Karl Gauerman, third; and Norman Blackmore, fourth. The low net winners were: Jerry Hillbish, first; R. Payne Wettstein, second; C. S. DeWalt, third; and K. Kahley, fourth.

The association cup, which has been in play for the past three years, was awarded to Mr. Gauerman for permanent possession. When this cup was put in play it was intended that it should be kept in play until one person had won it three times. However, as the names of only three members had been engraved on the cup twice, it was decided that these three should play for the cup at the October tournament, with the result that Mr. Gauerman is now the proud owner.

Several other prizes were also awarded. Mr. Vance received one dozen golf balls for making the lowest score on No. 8 hole. Three others made the same score as he did, but were not as fortunate otherwise. Individual high score was made by Mr. Dufort, who received three golf balls. The following were awarded golf balls in the kickers' handicap division: W. Simpson, E. Lamson, F. A. Vance, R. Payne Wettstein, J. A. Bailey and J. L. Hannon.

President James McKissock presided at an informal dinner in the evening and called upon a number of members and guests for short talks. Motion pictures of association tournaments in 1928, 1929, 1930 and 1931, taken by DOMESTIC ENGINEERING, were shown.

Plumbing and Heating Golf Association of New York Holds Final Meet

The Plumbing & Heating Golf Association of New York closed its outdoor season on October 20 with a tournament at the Fenimore Country club, at White Plains, N. Y., with Eugene Duklauer as host.

Through the generosity of the members and guests a great number of prizes were awarded, about forty in all, so that practically no one was disappointed.

M. Jarcho, president of the association, announced at dinner that a party would be held in February, the exact date to be announced later. At this party officers are to be elected for the coming year.

Following are the individual scores:

Guests—Kickers' Handicap 70-80

	G.	H.	N.		G.	H.	N.
Joe McNally	108	16	92	W. Rosenthol	106	30	76
T. W. Powers	100	25	75	M. E. Dugan	104	30	74
K. V. Carmer	92	15	77	A. Semels	106	30	76
E. D. Winslow	118	45	73	J. Nestor	134	55	79
C. J. Haas	103	30	73	I. Polack	105	35	70
F. P. Crotty	106	30	76	E. F. Keating	95	12	83

Plumbers and Fitters

CLASS A

	G.	H.	N.		G.	H.	N.
J. Weil	99	12	87	Al Deichsel	101	15	86
E. Duklauer	97	9	88	E. Halloran	110	15	95
B. Fassler	87	14	73				

CLASS B

E. Beer	113	33	80	V. Duffy	108	30	78
E. Lieblich	114	30	84	M. Jarcho	112	26	86

Manufacturers and Jobbers

CLASS A

	G.	H.	N.		G.	H.	N.
W. Doncourt	107	23	84	L. M. O'Neil	91	14	77
C. H. Denicke	95	14	81	L. Kelly	99	19	80
H. Garrity	98	14	84	M. Smolka	106	20	86
C. G. Wall	91	14	77	F. C. Allen	104	16	88
T. A. Johnson	82	7	75	C. A. Falk	111	19	92
J. F. Murphy	85	17	68	K. Robberts	83	12	71
D. S. Warth	98	17	81				

CLASS B

C. S. Coleman	114	28	86	F. Schill	42	15	
A. S. Foster	105	27	78	E. Bash	106	38	68
H. Heil	124	40	84	W. S. Hunter	109	39	70
J. Katz	106	34	72	H. Hanson	99	28	71
J. Edwards	102	31	71	E. Schwartz	111	30	81
C. Hensel	121	31	90	T. N. Ide	106	26	80
J. J. Lanigan	115	25	90	W. M. Mittleman	25	16	
C. J. Bray	118	25	93	A. O. Jaeckel	107	38	69
C. H. Leibfried	42	17					

Plumbers' and Fitters' Prizes

CLASS A

	Net		Net
1st prize—B. Fassler	73	4th prize—E. Halloran	95
2nd prize—E. Duklauer	86	5th prize—Al Deichsel	96
3rd prize—J. Weil	87		

CLASS B

1st prize—V. Duffy	78	3rd prize—E. Lieblich	84
2nd prize—E. Beer	80	4th prize—M. Jarcho	86

Manufacturers' and Jobbers' Prizes

CLASS A

	Net		Net
1st prize—J. F. Murphy	68	8th prize—C. H. Denicke	81
2nd prize—K. Robberts	71	9th prize—W. Doncourt	84
3rd prize—T. A. Johnson	75	10th prize—H. Garrity	84
4th prize—L. M. O'Neil	77	11th prize—M. Smolka	86
5th prize—C. G. Wall	77	12th prize—F. C. Allen	88
6th prize—L. Kelly	80	13th prize—C. A. Falk	92
7th prize—D. S. Warth	81		

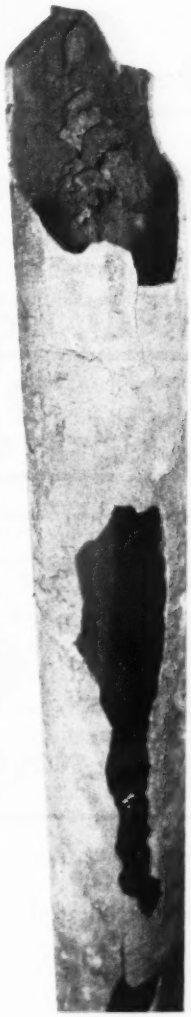
CLASS B

1st prize—C. J. Bray	66	8th prize—A. S. Foster	78
2nd prize—E. Bash	68	9th prize—T. N. Ide	80
3rd prize—A. O. Jaeckel	69	10th prize—E. Schwartz	81
4th prize—W. S. Hunter	70	11th prize—H. Heil	84
5th prize—J. Edwards	71	12th prize—C. S. Coleman	86
6th prize—H. Hanson	71	13th prize—J. J. Lanigan	90
7th prize—J. Katz	72		

Prizes were won by the following guests, in the order named: W. Rosenthol, F. P. Crotty, A. Semels and K. V. Carmer.

170 feet

is a lot of drain-pipe!



This is *not* a Picture of Duriron Acid-Proof Drain-Pipe

It shows what happens to material that is not meant to carry acid at all. Ten years ago 170 feet of drain-pipe of *non-acid-resistant* material was installed on the twelfth floor of the United Business Publishers, Inc., to carry waste acid from their photo-engraving plant.

After five years the pipe was eaten out by the acid and had to be replaced. But the same kind of material was again used. Result—a second replacement was necessary just recently. This time, however, the plumbing contractor installed Duriron Acid-proof Drain-pipe.

Further tear-up expense and grief from leaky pipe is thus avoided, since Duriron is acid-proof inside, outside and all the way through and should outlive the building in which it is placed. Installed like extra heavy cast iron. Joints are calked tight against leaks.

Alert contractors are recommending Duriron Pipe for acid wastes, because they know that builds business and profits. If you haven't all the details, write for them today.

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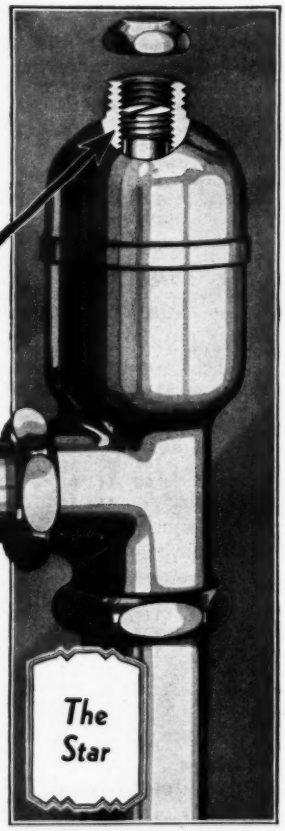
DURIRON ACID PROOF DRAIN-PIPE

SLOAN REGULATES

the *Main Opening* through the flush valve *Instead of a Touchy By-Pass*



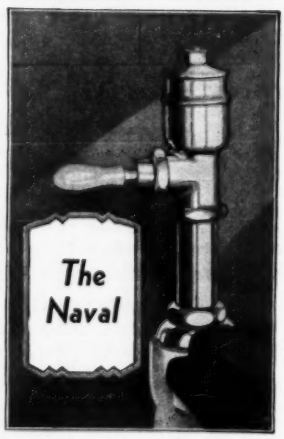
Each turn of this handy screw makes a gallon difference in the flush. Moreover, this adjustment "stays put"

The STAR

has ***many outstanding features*** that make it a superior flush valve for buildings of every type.

The CROWN has ***exactly the same features*** as the STAR except that it closes with the handle in the open position, delivering a uniform flush regardless of how operated.

The NAVAL has ***exactly the same features*** as the STAR except that it is made of Monel Metal and the best known Salt Water Alloy to resist the severe action of sea water.



SLOAN VALVE CO · CHICAGO

MARKETS

BUSINESS REPORTS FROM LARGE JOBBING CENTERS

WHOLESALERS interviewed during the past two weeks report, in the majority of cases, a fairly good movement of heating materials, saying that frequent calls for repair parts have helped considerably in bringing total sales to a more satisfactory level. The general line of plumbing finishing materials continued to move into consumption at a moderate pace, according to reports, and in this connection several wholesalers said that pottery was making a better account of itself than most other finishing lines. The movement of roughing-in commodities was light, as is usual at this season.

Manufacturers' stocks are reported to be of sufficient size and assortment so that no difficulty is encountered by wholesalers in securing prompt attention to their orders for material. These usually are for small quantities as jobbers appear intent upon keeping their stocks at minimum working levels. No reports have been received since our last review appeared of changes in manufacturers' published prices to wholesalers affecting the major commodities in the plumbing and heating field.

September wholesale prices of six standard plumbing fixtures for a six-room house, ascertained by the Bureau of the Census from reports of twelve representative manufacturers and wholesalers, averaged $96.32 as compared with $97.77 in August, $96.88 in September, 1930, and $98.97 in September, 1929.

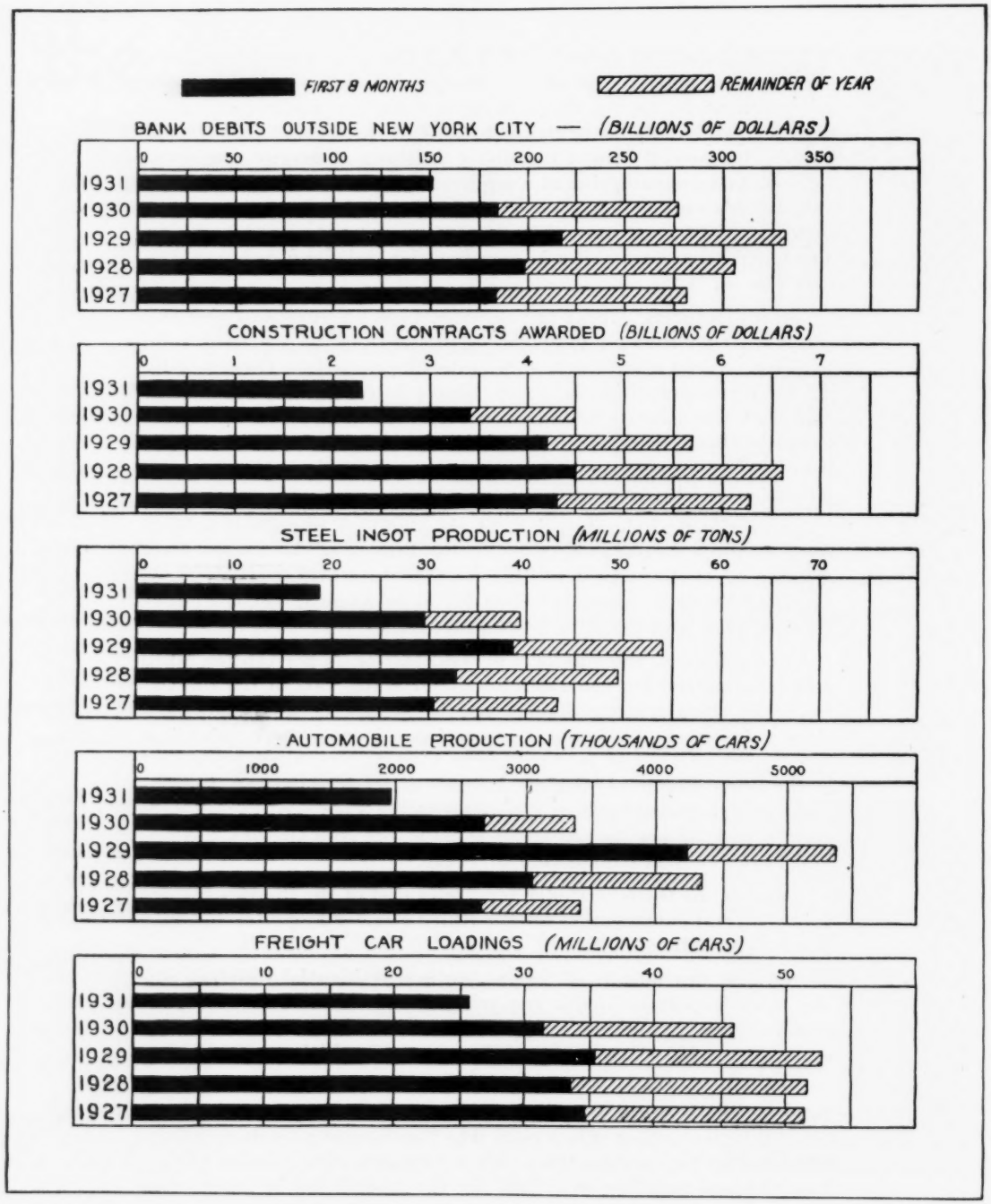
Exceptions to the rule of a general loss of 26 per cent in third quarter construction contracts for the 37 states east of the Rockies from the third quarter of 1930 are found in certain construction class gains by F. W. Dodge Corporation. Among these gains is a 29 per cent advance in engineering in Upstate New York, 6 per cent in the same class in the Middle Atlantic district; 34 per cent in non-residential building in the Chicago territory; 3 per cent in non-residential and 248 per cent in engineering in the New Orleans district; and 14 per cent in engineering in Texas.

Two of the thirteen Dodge territories east of the Rockies showed gains in total construction for this third quarter as contrasted with the 1930 period.

During the month of September non-residential building was the most important major construction class forming $112,417,500 of the entire $252,109,700 total for the month. Residential building amounted to $54,552,800; and public works and utilities to $85,139,400.

An advance over September, 1930, is found in the $21,545,400 total for the Upstate New York territory which compares with $16,-039, 400 in September of last year. The Southeastern territory gained slightly over September, 1930, with $14,886,100. The district around New Orleans totalling $6,637,000 for the month led by more than two million dollars over the comparative month of 1930.

1931 In Comparison With Preceding Four Years*



* From Bulletin of United States Department of Commerce.

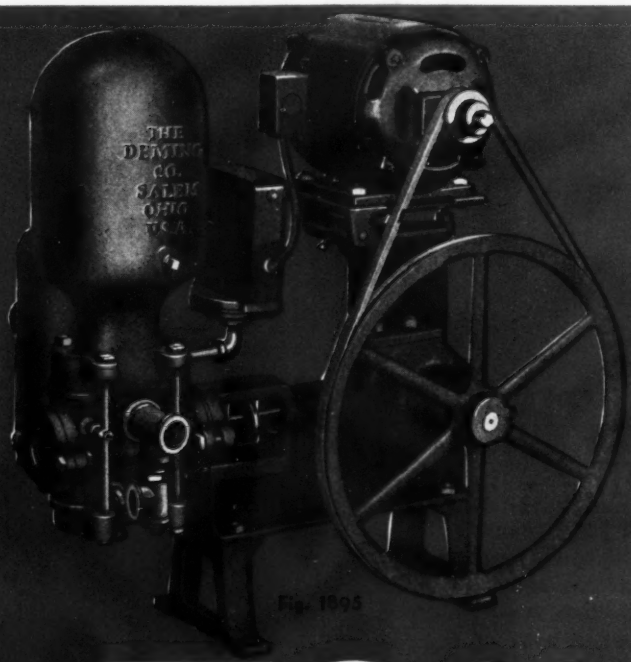


Fig. 1895

$72.00

F. O. B. SALEM OHIO

FOR A DEMING "MARVEL" SHALLOW WELL DIRECT WATER SYSTEM

265 GALLONS PER HOUR
(Low Cost Per Gallon)

BALL BEARINGS
On Connecting Rod

TIMKEN ROLLER BEARINGS
On Crankshaft

COMPARE THESE FEATURES

STAINLESS STEEL PISTON ROD

PATENTED SPLASH SHIELD

SECTIONAL CONSTRUCTION

THE DEMING COMPANY

Established 1880, SALEM, OHIO

Deming WATER SYSTEMS

THE DEMING COMPANY, SALEM, OHIO
Send me complete information on the Deming "Marvel" Shallow Well Direct Water System offered at $72.00. Also send the new catalog showing all Deming Water Systems.

Your Name _____

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J&L PIPE

A REPUTATION 81 YEARS IN THE MAKING . . . .

J & L Steel pipe, like all J & L products, is backed by a reputation that has been eighty-one years in the making. No compromise ever need be made with quality . . . for J & L exercises ownership-control over all raw materials and processes of manufacture from ore to finished product. J & L men use J & L mills and machines exclusively in all the operations necessary to convert J & L iron ore into J & L steel pipe. As a natural result, J & L Pipe proves its excellence in service, finds its best testimonials in the number of friends it makes.

OUTSTANDING FEATURES OF J & L STEEL PIPE

1—Uniform Quality Steel
2—Free from Excess Scale
3—Accurate Mill Threads
5—Sound Couplings
6—Thoroughly Coated
7—Rigidly Inspected
8—Galvanized Pipe Uniformly Coated—No Clogging with Spelter

J&L STEEL

The free-cutting qualities of J & L pipe come from a care that extends throughout every operation during manufacture. Careful selection of the steel and expert working of it produce a pipe with exceptionally uniform threading qualities. Because of the freedom from laminations and hard spots, the pipe fabricator can, with hand or power dies, obtain threads as sharp, true and accurate as mill threads. Joints that make up quicker, and hold longer, are the natural result.

JONES & LAUGHLIN STEEL CORPORATION

J & L JUNIOR BEAMS | J & L STEEL PIPE | J & L LIGHT CHANNELS | J & L NAILS and STAPLES BRIGHT and GALVANIZED | J & L CONCRETE BARS | J & L STRUCTURAL STEEL | J & L STEEL PILING

The Metal Market

	Oct. 26	Avg. Sept., 1931	Avg. July, 1931	Avg. 1929
PIG IRON—				
No. 2 foundry, Chicago	$17.00	$17.50	$17.50	$20.00
PLATES AND SHEETS—				
Steel boiler plates, Pittsburgh, per lb.	1.60c	1.60c	1.60c	1.93c
Blue annealed sheets, No. 10, Pittsburgh, per lb.	1.85c	1.85c	1.85c	2.17c
*Hot rolled annealed sheets, No. 24, Pittsburgh, per lb.	2.40c	2.40c	2.40c	2.85c
Galvanized sheets, No. 24, Pittsburgh, per lb.	2.90c	2.90c	2.90c	3.57c
TIN—				
Straits tin (spot) New York	22.75c			
LEAD—				
E. St. Louis	3.52½c			

The Old Metal Market
Dealers' Buying Prices

	Per lb.		Per lb.
Aluminum clippings	11½c	Copper, light	3¾c
Block tin pipe	15½c	Heavy copper and wire	4½c
Brass, light	2¼c	Zinc, old	1½c
Brass, heavy yellow	2¾c	Lead, heavy	2¾c
No. 1 comp. red brass	3¾c	Solder joints (close cut)	4 c
Heavy crucible copper	4¾c		

NOTE: Prices are those quoted on Monday of this week.
*Comparisons are with old classification No. 24 black sheets.

President Carrier Addresses Pittsburgh Chapter

The regular monthly meeting of the Pittsburgh Chapter of the American Society of Heating and Ventilating Engineers was held at the Keystone Athletic club, Pittsburgh, on October 5. Seventy-two members and guests were in attendance.

President Houghten appointed the following committee to make nominations for officers for 1932, and to report at the November meeting: W. W. Stevenson, chairman, F. A. Gunther and Paul Edwards. Nominations are to include a president, vice president, secretary, treasurer, and three members to serve on the board of governors.

The meeting was addressed by Willis H. Carrier, national president of the society, who delivered a most interesting and instructive illustrated talk on "Servicing the Human Power Plant."

President Carrier said that his subject had been developed from research, and that a large part of the research had been done at the A. S. H. V. E. laboratory at Pittsburgh, under the direction of Director Houghten. Buildings are heated, not to heat the human beings in them, he revealed, but rather to furnish an atmospheric condition that will serve to retard the dissipation of heat from the human body. Air conditioning is merely the supplying of those factors which will cause the human organism to react comfortably, by controlling the temperature, kind and quality of the air. A human being is really a power plant or heat engine, considered physiologically, his food being converted into mechanical energy, he said. By means of slides and the comfort chart, Mr. Carrier explained heat and moisture loss data resulting from temperature, humidity, and air motion studies made in the A. S. H. V. E. laboratory, and he brought out the relation of this data to air conditioning and the comfort of man.

He described the different systems used for air dis-

CO-OPERATION

The best defense against slackened business is diversity. Now is the time to develop specialty lines such as water softeners, heaters, humidifying radiators for which a great market exists, independent of new building or replacements. Crane Co. will gladly help you make this market yield profits. Your Crane Branch Manager will co-operate with you in locating the demand, in analyzing it for sales, and in developing methods of making it pay.

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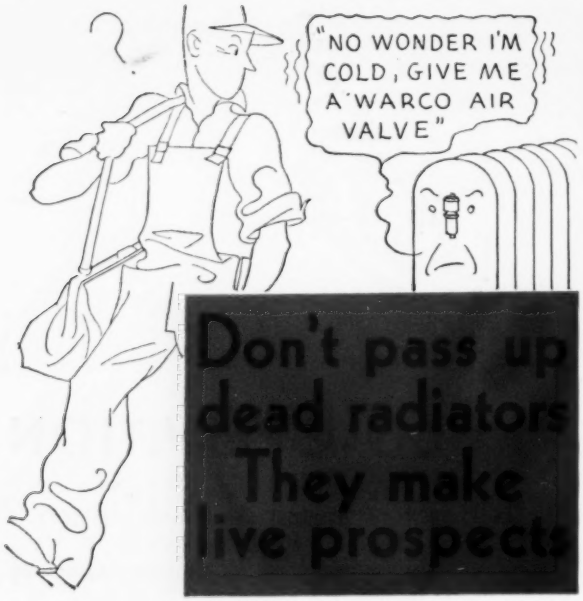
VALVES FITTINGS

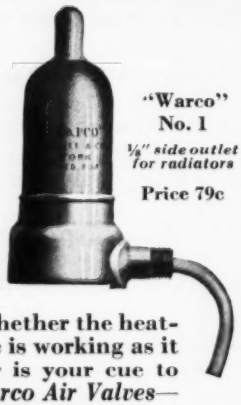


Seven "Warcos" meet every venting need

For Radiators—"Warco" No. 1 and "Warco" No. 2 Vacuum.

For Mains, Coils and Risers—"Warco" No. 3 and "Warco" No. 3V—Vacuum.

Quick Vent Valves for Mains and HV Stacks—"Warco" No. 4 and No. 5, and "Warco" No. 6 Vacuum.



"Warco" No. 1

⅛" side outlet for radiators

Price 79c

They tell at a glance whether the heating system in that house is working as it should. A cold radiator is your cue to suggest the remedy—*Warco Air Valves*—also a boiler inspection, which may mean a profitable reconditioning job.

A leaky faucet calls you to the house—or perhaps a broken water line or a clogged basin. Some repair work which is quickly done. Don't stop there. Look around you. If a radiator isn't working, or if it's hissing and spitting—open up a conversation. Warco is easy to talk and easy to sell to any house owner.

And the good you do your customer brings more business. Try it! Ask your Wholesaler. Mail the coupon.

W. A. RUSSELL & CO., *Established 1890*

New York Chicago Boston Detroit Baltimore Denver Minneapolis

"Warco" *Automatic Air & Vacuum* **Valves**

W. A. RUSSELL & CO., Grand Central Terminal Bldg., New York City. D-10

Please send complete data on Warco Air Valves.

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tribution and conditioning in general use, and compared them. Upward draft systems, he said, were first used in auditoriums, but they proved drafty and chilly about the feet. Today, he explained, in all large installations, cool air is introduced at the ceiling and is diffused by blowing it in thin streams against the ceiling. It seems more satisfactory, Mr. Carrier said, to introduce air at the front of a room, because people like to have air strike their faces, but not the backs or sides of their heads. He warned against the fallacy of cooling to an uncomfortably low temperature.

He stated that the problems of ventilating are largely the same as those of air conditioning, and said that while much is known concerning the ventilation requirements from a thermal basis, there is still a great field left unexplored. Laws of ventilation must take into account practical as well as theoretical considerations, he stated. Possibly, he said, there is an unknown factor in ventilation similar to vitamines in food, which could be introduced to give real mountain and seashore climate.

At the close of the talk, a number of excellent questions were raised from the floor, and a full discussion was participated in. T. N. Adlam, a member of The English Institution of Heating and Ventilating Engineers, of Birmingham, England, joined the discussion.

Convention Dates

November 11, 12 and 13, 1931—I. A. A.—The 32nd annual convention of the International Acetylene Association, to be held at the Congress Hotel, Chicago, Ill.

January 12, 13 and 14, 1932—WISCONSIN—The annual convention of the Wisconsin Master Plumbers' Association, to be held at Milwaukee.

January 25-29, 1932—A. S. H. V. E.—The annual meeting of the American Society of Heating and Ventilating Engineers to be held at Cleveland, Ohio, with headquarters at the Hotel Statler. Also the Second International Heating and Ventilating Exposition, at the Cleveland Auditorium.

February 2, 3 and 4, 1932—OHIO—The annual convention of the Ohio Master Plumbers Association, to be held at Cincinnati, with headquarters at the Netherland Plaza Hotel.

March 14, 15 and 16, 1932—INDIANA—The annual convention of the Indiana Association of Master Plumbers, to be held at Muncie.

April 11-16, 1932—A. O. B. A.—The ninth annual convention and show of the American Oil Burner Association, to be held in Mechanics' building, Boston, Mass. Convention headquarters at the Statler hotel.

April 27-29, 1932—N. P. S. A.—The annual convention of the National Pipe and Supplies Association, to be held at the Greenbrier Hotel and Cottages, White Sulphur Springs, W. Va.

June 21, 22 and 23, 1932—N. A. M. P.—The 50th annual convention of the National Association of Master Plumbers, to be held in New York City, with headquarters at the Hotel Pennsylvania.

COMING TRADE EVENTS

November 7, 1931—The seventh annual dinner-dance of the Jobbers' Credit Association of New York City, to be held at the Commodore Hotel.

November 16-21, 1931—The Third International Conference on Bituminous Coal, to be held at Carnegie Institute of Technology, Pittsburgh, Pa.

November 19, 1931—The annual meeting of the Western Trade Golf Association, to be held at the Bismarck Hotel, Chicago.

December 10 and 11, 1931—The seventh annual Conference on Welding, to be held at Purdue University, Lafayette, Ind.

June 20, 21, 22 and 23, 1932—Exposition of plumbing, heating and allied products, in connection with the 50th annual convention of the National Association of Master Plumbers in Madison Square Garden, New York City.

Dates Are Announced for N. A. M. P. 1932 Convention

At a meeting of the 1932 National Convention and Exposition Committee held October 19 at the Hotel Pennsylvania, New York City, under the direction of Matthew J. Kennedy, chairman, June 20, 21, 22 and 23 were set as the dates for the 1932 convention of the National Association of Master Plumbers. Madison Square Garden, scene of many gala national affairs, was selected as the exposition and convention site. The Hotel Pennsylvania will be convention headquarters.

The exposition will open on June 20, while the convention proper will open on June 21 and continue until the 23rd.

This is not only the Golden Jubilee convention of the association but also the first time it has met in New York City for thirty-five years. Because of these two factors, plans are under way to make this the greatest convention in the history of the organization.

R. H. Mattison, manager of the past three conventions, will establish an office in New York City in order to efficiently dispatch his duties.

◆

Illinois Zone Members Meet at Dixon, Ill.

The Northern Zone of the Illinois Master Plumbers Association met at Dixon, Ill., on October 14, with thirty plumbing and heating contractors of the zone in attendance. Considerable time was devoted to a discussion of the Illinois plumbers' license law. Several days before the meeting each member of the zone was sent a house plan and specifications to figure costs, same to be brought to the meeting. This also resulted in much interesting discussion.

The meeting was in the form of a one-day convention, the morning session starting at 10:30 a.m. and continuing throughout the day. Luncheon was served by the organization committee of the state association.

The following officers were re-elected: C. E. Ling, Freeport, president; A. A. Dieterle, Sterling, vice president; Kirk A. Journy, Rock Island, secretary-treasurer. In the past the zone has met only once each year, but it was decided that in the future two meetings will be held each year.

The following were appointed by the president to have charge of arrangements for future zone meetings in their respective cities: Joseph Nilson, Rockford; P. H. Kale, Rock Island; T. E. Beck, Dixon; A. A. Dieterle, Sterling; J. V. Lockhart, Moline; Louis Conter, Freeport; J. L. Brady, East Moline; R. W. Bridge, Elgin.

Talks were made by Fred Bailey, president of the Illinois Master Plumbers Association; H. T. Strenger and M. L. McKay, past presidents of the Illinois state association, and C. A. Bolton, general secretary of the Illinois association.

◆

Board Sets Dates for Wisconsin Convention; Approves Changes to Apprenticeship Rules

Recommendations for changes in the rules and regulations governing plumbing apprenticeship, the examination and licensing of plumbers, and the educational facilities for the plumbing industry, were approved by members of the board of directors of the Wisconsin Master Plumbers' Association, at a recent meeting at the Builders' Exchange, Milwaukee, Wis. It has been necessary to make some few changes in order to conform with laws passed during the 1931 session of the Wisconsin legislature. The changes have been submitted to the State Board of Health for final approval.

It was decided at the meeting of the board of directors to hold the annual convention of the Wisconsin Master Plumbers' Association on January 12, 13 and 14, at Milwaukee, Wis.

◆

Directors of Massachusetts State Association Meet in Boston

At a recent meeting of the board of directors of the Massachusetts State Association of Master Plumbers, held in Boston, applications for membership in the state association were accepted from the following: Paul K. McGuane, Ayer; Frances P. McCabe, Taunton; John E. Corbridge, South Swansea; Daniel J. Martin, Alton E. Nichols and Philias St. Denis, Fall River; Small-Denham Co., Springfield; Major J. LaBell, Edgartown; J. Edward Harney, Scituate, and Joseph P. Bridge, Somerset.

Frank E. Darling of Fall River, state president, delegated Robert Walmsley of Haverhill to attend the state journeymen's convention, which was held the latter part of September, as the representative of the Massachusetts State Association of Master Plumbers. John P. Murphy of Beverly also volunteered to attend.

Andrew F. Curtin, chairman of the legislative committee, reported on a meeting he had had with the

journeymen plumbers and the New England Plumbing Inspectors' Association. Mr. Curtin said that the consensus of the meeting was that new laws affecting plumbing installations are not needed so much as enforcement of the laws already on the Statute books.

John J. Downey, of East Boston, reporting for the M. I. T. committee, stressed the fact that the research bureau at Massachusetts Institute of Technology is more than a place for consultation, inasmuch as it stands ready to make a study of various types of equipment.

Charles F. Peck, president of the Greenfield association, reported that all members of his group have paid their dues up to April 1, 1932. President Darling announced that the board will meet on the third Wednesday of each month.

◆

Southern California Federation Elects New Officers

Santa Barbara was host-city to the Federation of Merchant Plumbers of Southern California when the members gathered at the colorful Mission city on the afternoon and evening of September 19. The election of officers to carry on for the new year starting October 1, and an address by Dr. Charles A. Gommere, formerly university lecturer, were the high lights of the occasion.

As the result of the election, the following were chosen to fill the official posts for the current year: President, William Nies, Los Angeles; first vice president, Thomas H. Hogan, Los Angeles; second vice president, W. H. Swihart, Pasadena; third vice president, F. D. Reed, Los Angeles; secretary-treasurer, W. E. Wilmot, Venice. L. E. Remy of Long Beach is the retiring president.

The speaker of the evening, Dr. Gommere, made searching comments on present day conditions in the business world. The speaker laid special emphasis on the fact that opportunity never comes without bringing in its wake a certain amount of responsibility. "There is no opportunity," he said, "altogether free from responsibility, and if any opportunities come to us we cannot escape their consequent responsibilities."

Federation headquarters were established at Vista Mar Monte hotel. The golf tournament took place at the Montecito Country club. The visiting ladies were taken for an enjoyable tour of the Montecito Estates in the afternoon, and in the evening a card party was arranged in their honor while the business session for the men was underway. The affair was wound up with a gay dancing party from ten o'clock until midnight.

◆

Progress Reported in Modification of Restrictive Oil Burner Codes

Standardization of oil burner codes, a goal long sought by the oil burner industry, is making rapid progress throughout the nation, according to reports reaching the Oil Heating Institute, which is sponsoring the move. More than a score of important municipalities in the last few months have adopted the model ordinance drafted by the Institute's engineers.

Field workers attempting to bring about the repeal or abolishment of obsolete restrictions, which impose an unjust burden on home owners, report that most cities are in hearty sympathy with the movement when the added burden to taxpayers imposed by out-moded ordinances is pointed out. Although there are many codes still existing which impose more drastic restrictions than the code recommended by the insurance underwriters, these are being modernized rapidly, says the Institute.

◆

Bureau Consumer School Manuals

Two handbooks have been prepared by the Plumbing and Heating Industries Bureau in connection with its consumer selling school program. Following the experimental school conducted in co-operation with the Lake County Sanitary and Heating Engineers Association, in Illinois, these manuals were carefully built up.

The first endeavor was to provide material that would not contain too much "cut and dried" theoretical material—but rather, to balance theory and experience in such a way as to illustrate the theory vividly, while sacrificing no interest.

One manual has been prepared for the students at such schools. This is called the "Student's Handbook." The second is the "Instructor's Manual." The lessons in each correspond, of course. Eight weeks are required to complete the course, with the following subjects treated in order:

How to sell a kitchen sink; How to sell an old-house heating job; How to sell an additional or modernized bathroom; How to sell heating specialties and overhaul; How to sell a closet combination; How to sell a storage heater and water softener; The place of the girl and the journeyman in sales; and How to find and record prospects for sales.

The student's manual has about one hour of reading matter for the class member to go through before the class meeting. The instructor's manual contains the instructions for handling the class and the material for each lesson.

The process of organizing a local consumer selling school is this: The local group should write to the headquarters of the national association in Washington, D. C. National headquarters will then arrange with the Bureau for the starting of the school. The manuals—one for the instructor, and one for each of the students, are supplied by the bureau. The only charge is for the loose leaf binder, a handsome composition cover in green, each binder costing $2.25. The only additional cost is for the instructor, who is paid by the local group.

◆

Maryland State Association Plans Busy Year

The regular meetings of the Master Plumbers Association of the State of Maryland have been resumed and will be held on the first and third Thursday of each month throughout the fall and winter months.

Varied and interesting programs have been arranged at which speakers of prominence in the plumbing industry will talk on matters affecting the plumbing trade and sanitation.

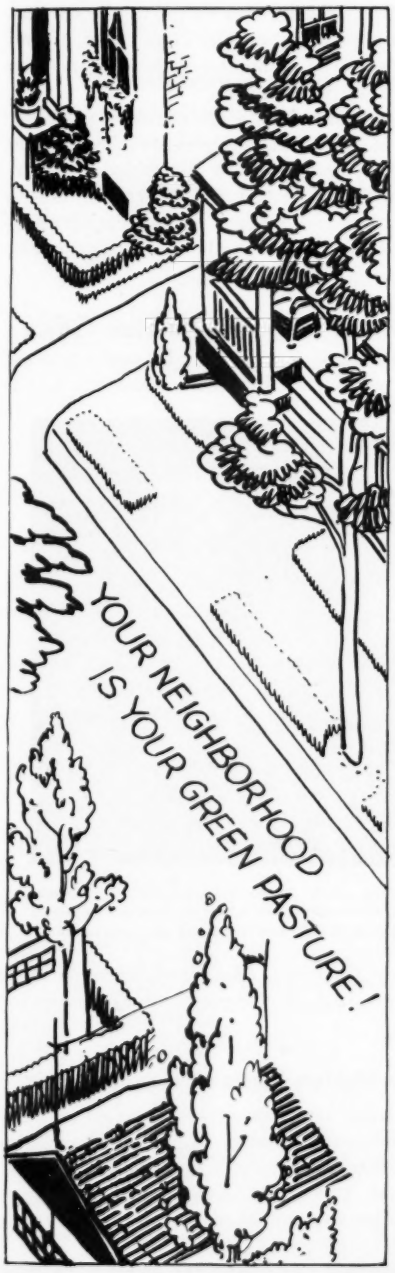
George J. Fitch, chief plumbing inspector of Baltimore, was the speaker at the last meeting. He took as his subject the new plumbing code which has now gone into effect in Baltimore. The various changes were

99 Out of 100 Want to be Told

Heating plant owners are always interested to know how to cut fuel bills.

Show them that flushing and servicing the heating plant more than pays for itself, by giving more heat with less fuel.

Do this, and you will find plenty of work RIGHT NOW, to keep your men busy.



At least once a year, every heating plant should be serviced, including flushing, repairing leaks, and replacement of broken and badly worn parts. This servicing is necessary, to give the house owner plenty of heat, at a minimum cost for fuel.

Cash in on this profitable business. Thousands of boilers all about you need servicing. Don't wait for the householder to send for you. Go out after the business. Your neighborhood is your green pasture.

"X" Boiler Flush removes rust, scale and sludge. Tones up the whole system. "X" Flushing jobs are easy to sell to the house owner, because as little as 1/8-inch of scale requires 25 per cent more fuel.

When there are leaks to be stopped, depend on the old, reliable "X" Liquid. It will save you time, labor and money.

Both "X" Liquid and "X" Flush are guaranteed to contain no soap, or any other ingredient that will cause foaming in boilers.

"X" LABORATORIES
25 West 45th St.
New York, N. Y.

called to the attention of the members, and after the meeting a discussion took place.

Members of the association made several suggestions regarding the manner in which prosecutions should be handled for violations of the ordinances relative to installation of plumbing. Mr. Fitch promised the members his full support and co-operation in bringing about a strict observance of the plumbing laws.

At the close of the meeting a vote of thanks was accorded Mr. Fitch for his excellent address and also in anticipation of his interest in the matters affecting the association.

◆

Baltimore Association Names Louis Adler President

At a meeting of the Association of Master Plumbers of the City of Baltimore, Md., held on October 8, the following were elected as officers for the ensuing term: Louis Adler, president; William Pritzker, vice president; Samuel L. Baltimore, treasurer; Alex Walpert, secretary; and Sol Goldman, sergeant-at-arms.

At the next meeting the Association will be addressed by George J. Fitch, director of the bureau of sanitation and chief engineer of the plumbing division of the Baltimore health department.

After the meeting a smoker and entertainment will be furnished by the association to its members and friends.

◆

Philadelphia Oil Burner Association Starts Drive for Members

The Oil Burner Association of Philadelphia has undertaken a drive to interest every oil burner dealer in becoming a member of the association. At a meeting on October 7, A. W. Clark, managing secretary of the Dealer Division of the American Oil Burner Association, Inc., was the principal speaker.

◆

Will Head Alabama Examining Board

Robert S. Lutz of Mobile, Ala., has been chosen president of the Alabama board of plumbers' examination and registration, created by an act of the legislature establishing machinery to govern the qualification of plumbers in Mobile and Jefferson counties. The board met in Montgomery recently and completed organization, preliminary to beginning the administration of its duties under provisions of the recently enacted legislation. H. A. Stevens is the other Mobile county member of the board.

◆

Wisconsin Considers Law Requiring Equal Employment of Plumbing Apprentices

The question of whether or not the plumbing and painting trades of Wisconsin should be declared an industry was taken under advisement by the Wisconsin Industrial Commission, following a joint hearing at the Wisconsin hotel, Milwaukee, on October 20, between representatives of that group and members of the Wisconsin Master Plumbers' Association, Journeymen's Association, State Board of Vocational Education, State Board of Health, and master painters and journeymen painters of the city.

Should the plumbing trade be declared an industry by the Industrial Commission indenturing of apprentices by contractors will be obligatory, thus putting all plumbing concerns on an equal basis with regard to workers and resulting in better trained mechanics in the plumbing field. At the meeting it was pointed out by representatives of the local and state plumbing associations, that the purpose of wanting plumbing to be declared an industry is to bring about an elevation of standards which will eventually rebound to the benefit of the consumer.

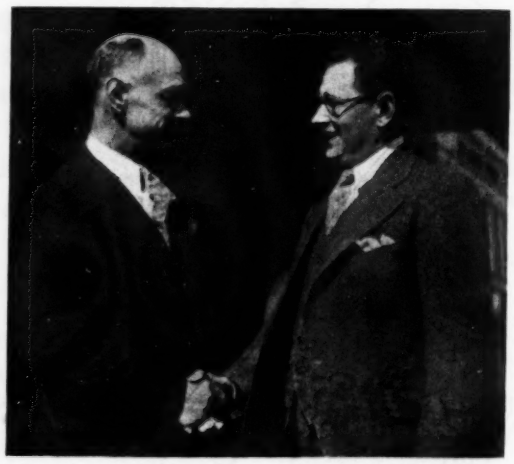
It is now up to the Wisconsin Industrial Commission to decide whether or not the trade should be declared an industry, and if so, how far this should apply, whether to cities of certain population, only to large cities, or only in those cities where the plumbing code now governs in respect to licensing of plumbers.

Henry C. Weber and Adolph Zurheide represented the plumbing trade at the meeting, as members of the general state advisory committee on apprenticeship training. L. R. Friend, president of the Wisconsin Master Plumbers' Association and Peter King, executive secretary of the Milwaukee Master Plumbers' Association also attended the gathering.

◆

New Jersey Master Appointed to State Office

Alexander F. Berg, of Orange, N. J., past president of the New Jersey Master Plumbers Association, has been appointed by Governor Morgan Larson of New Jersey as superintendent of Weights and Measures for the state.



Alexander F. Berg (left) being congratulated by Robert O. Stickles, secretary-treasurer of Hedges & Bro., Newark, N. J., upon his appointment to state office

◆

San Francisco Masters Frolic at Annual Picnic

Kendall Dell, near Los Altos, Calif., was the scene of a gay picnic-party, with games, supper and dancing as the main attractions, when the members of the San Francisco Master Plumbers Association and their families gathered for the annual picnic on the afternoon of September 19.

The weather, supper, music and the spirit of holiday fun-making contributed in full measure to the wholehearted success of the occasion. The association provided quantities of ice cream, coffee and soft drinks, the

ladies having prepared a copious supply of delicious home-cooked food. In fact, a large part of the success of the affair was due to the efforts of the San Francisco Ladies Auxiliary and its committee, composed of Mrs. William Koenig, president, Mrs. Ed. Balling, vice president, Mrs. Lena Sands, secretary-treasurer, and Mesdames Phillip Tabacco, S. J. Vecchio and Roy Murray.

The committee on arrangements was headed by Roy Murray, assisted by William Koenig, Ed. Balling and Edw. C. Curtis. Mr. Curtis presided over the coffee pots, amply sustaining his reputation as premier brewer of the Brazilian bean.

◆

Portland Masters Study Salesmanship

The class in salesmanship organized recently by the Portland Master Plumbers Association, under the direction of C. C. Weideman, is now in full swing and meets each Friday evening at the Builders' Exchange. C. C. Newhouse is the instructor.

◆

License Fee Is Reduced

The City Council of Oakland, Calif., has reduced the annual license fee required of master plumbers and side sewer contractors from $50 per year to $25 per year.

Obituary

Death of A. J. Kelling

A. J. Kelling, plumbing and heating contractor of Boulder, Colo., died in St. Joseph's hospital, Denver, on October 2, as the result of injuries sustained in an automobile accident. The accident occurred when he was returning home from a business trip to Denver.

Death of Frank G. Carthey

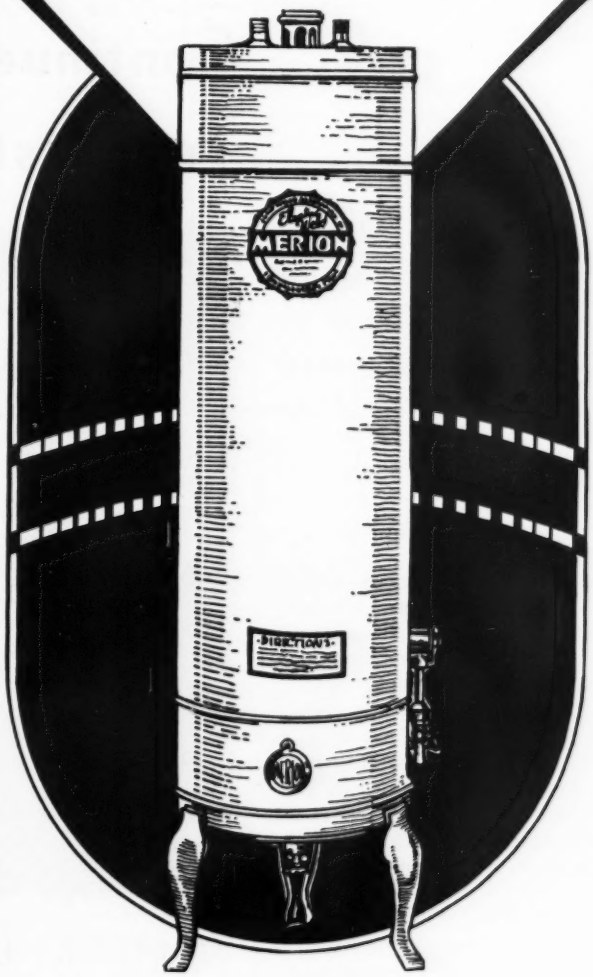
Frank G. Carthey, president of the Carthey Plumbing Company, Salt Lake City, Utah, and a former director of the National Association of Master Plumbers, died recently at his home in that city. Mr. Carthey was born in Davenport, Iowa, and came to Salt Lake City in 1889, when he established the plumbing business of which he was president at the time of his death. He was in his 67th year. He was a member of Mt. Moriah Lodge No. 2, F. and A. M., Utah Consistory No. 1 and El Kalah temple, Nobles of the Mystic Shrine. He served as a National director in 1924-25, during the presidency of John J. Vogelpohl of Cincinnati, Ohio.

Frank G. Carthey

Mr. Carthey is survived by his widow, two daughters and one son. The latter, Joseph F. Carthey, has been associated with his father for a number of years as assistant manager of the business.

MERION

WATER-HEATERS



This is the best season in the year to push water heater sales. People are beginning to prepare for winter.

That is the reason why you should display and sell the MERION now!

It is automatic—it is economical—both in original cost and in operation. Best of all it is easy to sell and install.

Get lined up with The Merion now. Write us for full sales information.

JOHN WOOD MFG. CO.
CONSHOHOCKEN, PA.

Why the Problems of the Industry Continue To Exist

WALTER KLIE,

*active in association work, makes some pungent remarks on how "the buck is passed"**

YEARS ago when the major problem in most industries was one of production, it was very fitting that discussions on the mechanical and practical sides of our business should dominate our conventions.

The problem of all industries, including our own at the present time are problems of distribution, merchandising, business administration, all pointing towards the creation of profitable sales. The past year has been and I am afraid the present year will continue to be a touch stone test for business management, and it behooves us to take apart our own business and lay it on the table for careful analysis.

On a calm sea, in the bright sunshine, over a familiar route, any ship can travel safely; but on a stormy sea, in the fog, it requires a well charted route with an alert, able pilot, determined to stick closely to his charts.

No one believes that 1931 will not have its full share of storms and fog, and it behooves us to have our cost charts in fine shape and then believe them, for if we do not, we will doubtless find the life-boats pretty well crowded.

There are, of course, two sources of business that we can look forward to; first, that which comes through plans and specifications and work originating with a natural demand and without any creative effort on our part, and second, such business as we create through intelligent merchandising effort and home modernizing.

Remodeling Work Is Profitable

You all know the real value of the second class of work and the fact that it is more likely to be sold at a profit, and from many sources you are informed of proper ways and means of creating this work, and the co-operation offered by manufacturers and material men. Inasmuch as that subject would require a paper in itself, I am not going to do anything except to stress the importance of making every effort in an intelligent manner to increase your volume by this method.

The volume in the first type of work mentioned above, is not going to be so great as to automatically relieve the economic pressure and consequently it behooves us to most carefully study our situation and to develop policies to which we must adhere if we expect to survive.

Labor and material costs, as low as can safely be secured by efficient handling and buying, must be so carefully prepared as to demand our greatest respect and confidence.

Overhead must be accurately calculated upon the basis of an anticipated volume, not much if any greater than

*An essay read at the 40th annual convention of the Ohio Master Plumbers' Association.

last year, depending upon whether or not the volume for the past year was secured with some regard to price.

Prices must then be made upon the basis of such labor and material and overhead costs as the absolute minimum in all cases, regardless of a competitor's real or imaginary figure, and any profit desired added thereto.

These facts are so obvious, that it seems very academic to repeat them, yet everyone of us knows from the experience of the past year, that unless we resolve to make them the foundation of our policy for 1931, and renew our resolution to stick to such a policy almost daily, the struggle for business and the economic pressure of the coming year, will break through them.

Contractors' Costs on New Work Differ Only Slightly

In the first class of business mentioned above, the cost of material and the cost of labor in any competitive territory is practically the same to all competitors, and the estimates are based upon the same plans and specifications in the vast majority of cases.

"The greatest single contributing factor to the unhealthy condition of the plumbing contracting business in the country today is the unwarranted extension of credit beyond reasonable terms and amounts to the contractors by the material and supply men"

Consequently there exists a condition of uniformity in actual cost of labor and material that should make almost impossible great variations in bids.

The entire range of bids should be covered by a slight difference of opinion as to the number of days of labor required, some possible differences in actual overhead, not arbitrarily determined or ignored, and then profit added.

What then accounts for the fact that in such a large number of cases the difference, not only between the high and low bidder, but often between the average and low bidder is greater than all the labor, all the overhead and all the profit?

That ridiculously low bidder must have committed many crimes against himself and this splendid business when he prepared his estimate.

He, of course, did not take off his quantities or estimate his labor with any care or intelligence. He probably believes "overhead" is something to talk about at association meetings and read about in trade journals, instead of realizing that, if ignored or underestimated, it will destroy his business as surely as a cancer would destroy his life.

He Probably Added What He Thought Was a "Profit"

Isn't it a tragedy how often such a contractor fools himself with the "10 per cent profit" on the bottom of a so-called cost, which has been underestimated in material and labor by 10 to 25 per cent, and which has been cheated by 15 to 25 per cent because "overhead," one of the surest items of cost, has not been added?

The above type of competitor is surely nothing to worry about, unless you are weak-kneed and weak-minded enough to lose confidence in your own cost sheets and crawl down in the very mire with him.

Don't give false dignity and value to his bid by seeing how close you can get to it on the next job by cutting your bid. Leave him alone in his misery and try to encourage the jobber and manufacturer to make you and all your competitors pay their bills, for taking work below cost of labor, material and overhead, and paying bills are not synonymous.

The contractor who figures his labor and material accurately but ignores overhead and adds say his "10 per cent profit" would not think of submitting his bid prepared on an estimate which had at the bottom 20 per cent overhead and in place of "10 per cent profit" wrote "10 per cent loss," and yet that is exactly what he is doing.

He, of course, lasts longer than the first type. He gets a non-competitive job occasionally, does some day work, and his "bills payable" grow so slowly that the jobber is quite lenient and he hangs on year after year wondering what is the matter with the business.

I was going to add another class, the one who figures accurate costs, adds overhead, but does not add a reasonable profit, but I do not believe that is necessary.

I believe the man who knows his material and labor costs, knows and respects his overhead, will just naturally be intelligent enough to add a proper profit.

Now what is the cure for this "bad condition of the business"?

Is it associations? Yes, as far as they can help us in education regarding the facts of our business and its proper management and bring us to a better understanding of our fellow contractors, they are very essential.

The Real Cure Rests Within Ourselves

The facts given above are so generally known and have been so often repeated that I believe almost everyone who may read them will agree that they are true about "His Competitor."

That is why they are not cured. We pass the buck to our competitor instead of squarely analyzing ourselves and admitting our guilt.

Do *you* figure costs carefully and accurately? Do *you* add your actual overhead? Do *you* add a profit? Do *you* have confidence in your bid so prepared and stand by it? Or do you give the same moth-eaten answer that is like a ball and chain on you—"If I did, I would get no business, because of my competitors."

Your competitor says that same thing, and *you* are one of those he is talking about, and so it goes around in a cycle like playing "button, button, who has the button."

Be men enough to start it and don't weaken at the first job you lose. You are probably losing a lot of them now and when you do get one, what have you?

We must get our pronouns straightened out and sub-

Keep his head up

and we'll all come through!

You recognize this man. He lives in your own town, not far from you . . .

Though faced with unemployment, he is combating adversity with courage. He has retreated step by step, but fighting. He has spread his slender resources as far as they will go.

This winter he and his family will need your help.

There are many other heads of families much like him in the United States. This winter all of them will need the help of their more fortunate neighbors.

This is an emergency. It is temporary. But it exists. It must be met with the hopefulness and resource typical of American conduct in emergencies.

Be ready! Right now in every city, town and village, funds are being gathered for local needs—through the established welfare and relief agencies, the Community Chest, or special Emergency Unemployment Committees . . .

The usual few dollars which we regularly give will this year not be enough. Those of us whose earnings have not been cut off can and must double, triple, quadruple our contributions.

By doing so we shall be doing the best possible service to ourselves. All that America needs right now is courage. We have the resources. We have the man power. We have the opportunity for world leadership.

Let's set an example to all the world. Let's lay the foundation for better days that are sure to come.

The President's Organization on Unemployment Relief

Walter S. Gifford
DIRECTOR
Committee on Mobilization of Relief Resources

Owen D. Young
CHAIRMAN

The President's Organization on Unemployment Relief is non-political and non-sectarian. Its purpose is to aid local welfare and relief agencies everywhere to provide for local needs. All facilities for the nation-wide program, including this advertisement, have been furnished to the Committee without cost.

stitute "I" instead of the much abused "they" in placing the blame for competitive prices.

If the assumption that our labor and material costs on this type of work are quite uniform, and that our overheads are quite definite and do not vary a great deal in the same class of contractors, and our estimate sheets are carefully prepared, and our overhead actually known, why then do not the natural economic laws solve our problems, by putting out of business those of our competitors or ourselves, who habitually ignore these basic facts?

Loose Credits Biggest Danger to Contracting Business

This brings me to my old favorite topic, namely, that the greatest single contributing factor to the unhealthy condition of the plumbing contracting business in the country today is the unwarranted extension of credit beyond reasonable terms and amounts to the contractors by the material and supply men, which permits the contractors to continually dump their underestimated costs and their overhead into growing accounts payable and thereby continue indefinitely to submit bids at such a low price as to undermine the entire industry.

"This loose policy on credits permits contractors to continually dump their underestimated costs and overhead into growing accounts payable and thereby continue indefinitely to submit bids at such a low price as to undermine the entire industry"

Some progress is being made in different localities, but the economic pressure of the present time is making it rather difficult for the supply men to adhere to the policies of reasonable but firm credit terms, as rigidly as they should. They have permitted the situation to get so bad, and the need of business is so great, that they permit Old Man Expediency to ride in the saddle and replace Mr. Sound Policy, scarcely realizing that they are merely postponing the tragedy, and while postponing it are increasing the extent of the catastrophe.

The process that we are all going through at the present time, is often referred to as the survival of the fittest, with the inference that this shaking down of the grates, will react to the advantage of those that hang on and do not fall through to the ash pit, when business gets better. Theoretically, the sound, progressive, alert and intelligent jobbers and contractors will be left, and that is supposed to be one of the compensating factors to help cheer us through these conditions, and to reward the fit after they have survived the slump.

There have been failures the past year among jobbers and contractors, and I am afraid there will be quite a few during the coming year.

Some will be due to some bad breaks, and they should be given every consideration; but the large majority will be due to inherent unbusinesslike operation, unwarranted credit extension, and basic unsoundness in policies just brought to a head by the present conditions of business.

Manufacturers and jobbers can readily determine, if they want to, which of the failures (either brought in the open by bankruptcy or covered up by additional bad credit extension or creditor committee compromises) are in the latter class.

Are they going to permit these unfit who may again start in business, either as their own successor, or by giving birth to twin or triplet successors, to enjoy credit privileges beyond those that they give to the contractors that have paid their bills through thick and thin, so that they can again put their underestimated costs and overhead into growing accounts payable and again stick the supply man and undermine the bill paying contractors by affording impossible competition?

They always have and surely will again if they do not give serious thought to the subject and develop intestinal fortitude enough to form a policy and stick to it regardless of the pressure of easy business for their books, and eventually for their books only.

The above would indicate that I have also passed the buck and am beginning to use the pronoun "they" instead of "I" or "we." That is true with modification, for I firmly believe that unless we as contractors in our local and our state and our national association seriously demand of our sources of supply through the Central and Eastern Supply Associations, through our local jobbing organization, that they establish and adhere to reasonable but firm credit terms, and support those supply men who do follow this policy and ignore those who do not, we will never attain this vital objective and will just drift around through these stormy seasons and through these fogs like a ship without a pilot.

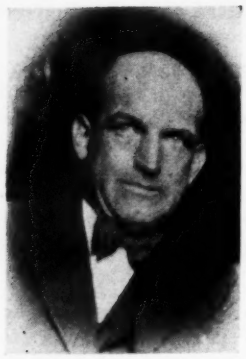
Gentlemen, what are you going to do about it? Perhaps say a few complimentary or uncomplimentary things about this paper, or take the problems home and make serious effort to work them out?

The value of our association activities depends entirely upon the use that is made of the exchange of ideas at our convention and at our meetings. I seriously beseech you to resolve to make your full contribution towards bettering our industry and the business in which you are making a livelihood, and to definitely use the pronoun "I" instead of "they" in your resolution.

◆

Importance of the Design of a Building

The design of a building should take advantage of every opportunity to make the annual cost as low as is consistent with the use for which the building is intended. Annual cost is intended to mean operating cost plus fixed charges. That is, everything possible should be done to make the cost of operation low provided the investment charges can be justified. The minimum cost of operation is determined by the design of the building. If the operating cost is high because of improper operation or maintenance, the difficulty can be corrected, but the limitations imposed by the design last the life of the building.



J. V. Young

New California License Law Deals Blow to Irresponsible Contractor

Three prominent plumbing and heating contractors tell why they favor the law, which is designed to safeguard the material man as well as the property owner

CITING the probable benefits accruing from the newly enacted contractors' license law, a number of San Francisco's leading master plumbers were agreed that it was an outstanding piece of legislation, and one that should go far toward eliminating the undesirable element among the ranks of the contractors.

J. V. Young, president of the California State Merchant Plumbers' Association, and a member of the firm of Gilley-Mank-Young Company, said: "This law should prove to be one of the greatest moves for good promoted in recent years, so far as the established subcontractor is concerned, and we all know this group has sorely needed some kind of legislation to protect the sub-contractor from the actions of unscrupulous general contractors, speculative builders and fly-by-night promoters; this also goes for some of our material outlets who have depended upon the lien laws for the collection of moneys due them.

"Space does not permit me to go into the many details and provisions of the law, and the penalties attached to violations thereof; these facts are easily obtainable from any of the state officers in charge of enforcement. However, I wish emphatically to commend this law to our branch of the industry in California by urging all members to co-operate fully with the officials concerned. I feel sure the entire industry will benefit."

Eliminates Fly-by-Nighters

Joseph H. Ahlbach, senior member of the firm of Ahlbach & Mayer, had this to say: "In my opinion the California Contractors' registration and license law should benefit the plumbing and heating branch of the building industry by acting as a stabilizer—an effective medium that will go far toward eliminating the black sheep. Irresponsible fly-by-nighters will be obliged to change their tactics or they will find themselves trying to do business without a license; and this is impossible. If they fail to change their methods they will be served with a warrant. In most cases, irresponsible contractors are those who are parties to questionable methods of financing a building project, who maliciously divert funds from one job to another in an effort to "protect" themselves, who fail to meet their material bills, who substitute goods that are plainly inferior to those called for —which substitution is not readily apparent to the owner.

"Having real 'teeth' in it, the new law will, as I see it, tend to correct these practices. By so doing, the established plumbing and heating contractors of this state will be relieved of an immense burden of competition that is manifestly unfair, such advantage, in turn, being passed along to the owner in the shape of better workmanship and material. This effect will soon make itself felt throughout the other two branches of our industry.

James H. Pinkerton, dean of San Francisco plumbing and heating contractors, feels this way about the new law: "The California license law, as I see it, amounts to a sort of 'policing' of contractors whose reputations are not at all what they should be; in short, those who do not pay their bills will be put in their proper place. I understand that one of the functions of the law is either to cancel or suspend the licenses of those contractors who do poor work, who fail to meet their obligations, who divert funds from one job to another—all this to the

detriment of the established contractor. The law should have a decidedly stabilizing influence on the building business, and one that should work to the betterment of every earnest, established contractor in the state."

How the Law Operates

Carlos W. Huntington, Registrar of Contractors for the State of California, explains how the new registration act operates in the following statement:

"The operations of the Contractors Registration Act is of vital importance not only to the contractors but to the general public as well.

"The act provides safeguards for the property holders, for the pubic at large, for the laborer and for the material man, insofar as it is possible for a governmental agency to provide safeguards. It prevents to a great extent the filing of liens for labor and for materials furnished upon the job, and therefore is a great preventive of trouble and expense to the property owner.

"The material man also is protected in that, should the contractor fail to pay his bills for material furnished on a particular contractor's job, the immediate notification of the Registrar of Contractors will provide for an investigation by the State without cost to the material man. Should the facts be as represented, the contractor will not be permitted to engage in further prosecution of this contract or any other contract until he has taken care of his bills for material, or shown some disposition so to do.

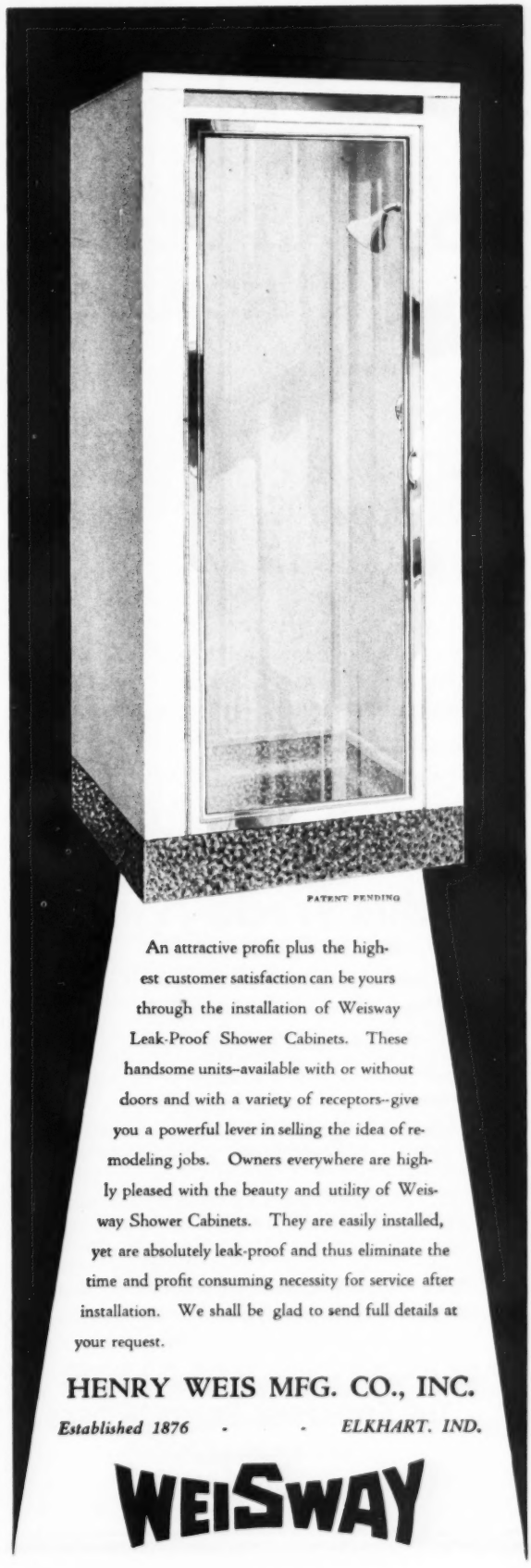
"Anyone operating as a contractor or holding himself out to be a contractor, or advertising as a contractor, or bidding on work as a contractor without having a licence from the State so to do, is guilty of a misdemeanor and subject to both fine and imprisonment.

"The Registrar of Contractors has the right, under this law, to suspend or revoke a license of a contractor in the State of California for his failure to complete a job—in other words, the abandonment of a contract without legal excuse. Should a contractor bid too low upon a job, and find after he has started that he is unable to complete it within his contract price, and attempts to abandon that job, he is subject to the restrictions imposed upon him by law, and the Registrar will immediately suspend or cancel his license to do business in the State of California until he makes good upon that particular piece of work.

"Another ground which makes a license subject to cancellation or suspension is the diversion of funds or property received for prosecution or completion of a specific contract or for a specified purpose in the prosecution of or completion of any contract and their application or use for any other contract, obligation or purpose. In the past it has been the policy of some contractors to take moneys received from one particular piece of work and apply them upon the prosecution of another job that they may have under contract.

"This law, as amended, absolutely prohibits that. The moneys received upon a particular contract must be used in the completion of that contract, in the payment for material and for labor upon that job, and for no other until the job is properly completed and the material men and laborers are paid.

"The license may be suspended or revoked if there is a fraudulent departure from or disregard of plans or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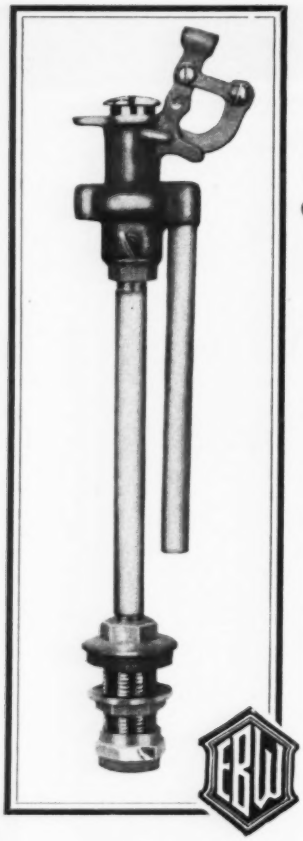
An attractive profit plus the highest customer satisfaction can be yours through the installation of Weisway Leak-Proof Shower Cabinets. These handsome units–available with or without doors and with a variety of receptors–give you a powerful lever in selling the idea of remodeling jobs. Owners everywhere are highly pleased with the beauty and utility of Weisway Shower Cabinets. They are easily installed, yet are absolutely leak-proof and thus eliminate the time and profit consuming necessity for service after installation. We shall be glad to send full details at your request.
HENRY WEIS MFG. CO., INC.
Established 1876 - - ELKHART. IND.
WEISWAY



AVAILABLE in 5/8 in. shank, 1¾ in. long. Also with long shank, ¾ and ½ in. and Douglas thread.

This Ball Cock and this Trade Mark

For many years, the Enterprise Brass Works trade mark has been the insignia of quality in plumbing brass goods.

The name back of the Enterprise "35" Ball Cock is your assurance that it is made to the highest of standards.

Enterprise on any brass goods means that quality materials, workmanship and design were the only considerations in its manufacture.

The "35" Ball Cock is particularly well adapted to remodeling work. It has a renewable chromium seat; fits any tank, has no overhang leverage; body can be adjusted after tightening locknut; body lifts off by loosening thumb screws; plunger easily removed.

Ask for the Enterprise "35" Ball Cock at your jobber's.

THE ENTERPRISE BRASS WORKS

Muskegon

Michigan

specifications in any material respect without consent of the owner or his duly authorized representative. This is also a safeguard for the other contractors as well, inasmuch as a contractor shall not bid too low upon a job, figuring that he will slight the specifications and then come in competition with the man who is bidding honestly and well, figuring on doing the work in full accordance with the specifications. The Department is very insistent upon a strict adherence to specifications.

"Willful and deliberate disregard and violation of the building code of the State or of any political subdivision thereof, or of the safety laws or labor laws of the State, brings forth the penalty of suspension or cancellation of a contractor's license.

"A contractor in the past, who had not financial responsibility and who had no business organization, and failed to keep records so that the State officials and the public would know nothing of what he did with the money that he received, whether he paid just claims or not, or whether he left the property holders saddled with liens and other obligations incident to his work, was hard to check upon or convict. Today, the law provides that full and complete records of all transactions must be kept, and the records are open to the Registrar of Contractors for inspection.

"Misrepresentation of a material fact by an applicant in obtaining his license is also ground for the suspension or revocation of his license. Therefore, the questionnaire provided by the Department for the contractor in applying for his license must be truthfully and fully answered in order that we may know his responsibility.

"One of the strongest points of the entire law is the fact that the doing of any willful, fraudulent act by the licensee as a contractor, in consequence of which another is substantially injured, is ground for immediate action by this Department.

"Any contractor engaged in the business of contracting is prohibited by law from maintaining any action to collect upon his contract unless he is duly licensed by the State of California.

"The Contractors Registration Act eliminates what we term the 'fly-by-night' contractor from coming into the State and attempting to virtually steal jobs at prices far below the capacity of the contractor to complete the same. Such competition hurts legitimate business, because it is not founded upon stability, competency or integrity. It has been the practice of some of these 'fly-by-night' contractors to enter into contracts in one section of the State, collect all of the money that they could upon the face of the contract from banks, from the property holders or finance companies, then to abandon the jobs and move to some other section of the State to carry out the same line of nefarious conduct. That is absolutely prohibited under this law, and we are endeavoring to the very best of our ability to eliminate and eradicate such practice."

◆

Oswego, N. Y., Master Is Active in Civic Affairs

John Roach, master plumber of Oswego, N. Y., and for the past two years city alderman representing his ward in the Common Council, is again a candidate for office. Mr. Roach is president of the Oswego Master Plumbers' Association.

Portland, Ore., Masters Give Party

The Portland (Ore.) Master Plumbers Association held a dance and card party at Kelly's hall on October 3. Approximately 75 persons, including members, their friends and the representatives of supply houses were present. Refreshments were served and the evening was enjoyable in all respects.

◆

Chicago Masters Close Golf Season; Year's Prizes Are Awarded

The Plumbing Contractors' Association of Chicago held its final golf tournament of the 1931 season at the River Forest Golf Club on October 15; splendid autumn weather and the fact that season and special prizes, in addition to the regular tournament prizes, were to be awarded, combined to attract a large turn-out of members and guests.

In order to qualify for one of the season prizes it was necessary for a player to have participated in four or more of the regular monthly tournaments during the season.

Ed. Mortimer, whose total net score for four tournaments was 319, won first low net in Class A for members, and was awarded the season loving cup for this division. In Class B for members the season cup went to Ed. Young, whose total net score for four tournaments was 301. The Class C season cup for members was awarded to George Feldkamp, whose total net score was 307.

Joseph Comer won the Class A season cup in the guest division, with a total net score of 296 for four tournaments. The Class B cup went to A. M. Boosey, whose total net score was 324.

The association's challenge cup, awarded each year to the player with the lowest average net score for the season, went to Joseph Comer, with a 296. This must be won three times for permanent possession.

Numerous special prizes were also awarded, as follows: William P. Arnold and Henry Swade, members, and M. Schulhof, guest, were awarded prizes for blind bogey. Perry Russell, member, and Joseph Carroll, guest, were rewarded for taking the least putts during the 18-hole afternoon round. "Mystery" prizes were awarded to Glen Tellefston and Charles A. Dreier; while Walter Brown received the duffer's prize and Ralph B. Reedy, the "surprise" prize.

Ed. Mortimer, Charles Dreier, Fred Zimmer, Peter M. Munn, Frank Fabri and William Brookman were duly rewarded for having attended all six of the monthly meets. The following were remembered for having been on hand for five of the tournaments: James W. Fettes, William Knaus, H. P. Reger, E. C. Wagner, Henry Diedesch, George Feldkamp, R. C. Flinder, Frank B. Hackett, A. M. Boosey, H. Scheel and Ed. Young.

The prize winners for the afternoon's play in the various handicap divisions follow:

Class A for members: John Corboy, first; Ralph Reedy, second; W. J. Sievert, third. Class B for members: Joseph Cannon, first; Ed. Young, second; R. Lindeblad, third. Class C for members: H. H. Diedesch, first; Walter A. Brown, second; George Feldkamp, third.

Class A for guests: Joseph Comer, first; Fred Zim-

No Special Grip is Needed on the New Improved USHCO LAWSON WRENCH...

...The Wrench With the Angle Handle

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mer, second; Robert Sells, third. Class B for guests: Frank Fabri, first; Ed. Hoelscher, second; Fred Wagner, third.

Ed. Mortimer won the morning qualifying round of nine holes.

Following are the individual scores for the afternoon 18-holes of the October tournament:

Player	G.	H.	N.	Player	G.	H.	N.
Wm. P. Arnold	102	25	77	J. S. MacKenzie	100	16	84
Chas. Barrows	104	18	86	Ed Mortimer	99	19	80
A. M. Boosey	105	23	82	Peter M. Munn	105	22	83
W. R. Brookman	120	32	88	Ralph Reedy	87	10	77
W. A. Brown	123	33	90	Henry Reger	107	23	84
Jos. W. Cannon	101	27	74	Wm. E. Renich	111	25	86
Jos. Carroll	93	13	80	Perry Russell	106	30	76
Jos. Comer	82	10	72	Herman Scheel	115	24	91
John Corboy	95	19	76	M. Schulhoff	97	15	82
Henry Diedesch	116	31	85	Robt. Sells	88	10	78
Chas. Dreier	106	25	81	Wm. J. Sievert	102	20	82
Frank Fabri	100	25	75	Henry Swade	122	28	94
Geo. Feldkamp	119	30	89	Glen Tellefson	102	19	83
Jas. W. Fettes	115	23	92	E. C. Wagner	114	28	86
R. C. Flinder	104	17	87	Fred Wagner	109	28	81
Frank Hackett	107	16	91	Rupert J. Weber	122	27	95
Ed Hoelscher	102	22	80	Tod Winkins	98	13	85
Wm. F. Knauss	117	22	95	Harry C. Yelton	111	21	90
Frank Kveton	109	21	88	E. J. Young	98	21	77
Ralph Lindblad	103	25	78	Fred Zimmer	96	19	77
John MacGregor	98	12	86				

◆

Indianapolis Bowling League Plans Big Season

Members of the Indianapolis (Ind.) Plumbing and Heating Bowling League are looking forward with enthusiasm to this year's bowling season, as a result of the interest displayed in the games at the first meet of the season, held at the Illinois Alleys last month.

The league is composed of ten teams, consisting of representatives of wholesalers, master plumbers and journeymen, and the organization is now in its fourth season. These meets, which have proved their value in the past as creators of good-will and harmony in the industry, are held once each week.

The Indianapolis group is in a position to play return games with representatives of the plumbing and heating industry from nearby cities, and feels that this would help to increase good-fellowship in the industry throughout the state. George T. Watson, Castle building, Indianapolis, is secretary of the league.

◆

California Plumbing Inspectors Elect New Officers

At the annual convention of the California Association of Plumbing Inspectors, held in Sacramento, Calif., recently, G. R. Hilliker, of Fresno, was elected president. Fred Johnson, of San Jose, was elected vice president of the northern division; Charles P. Dailey, of Los Angeles, vice president of the southern division, and Stephen I. Smoot, of Los Angeles, secretary and treasurer.

The following members of the executive board were also elected: Northern division, E. A. Court, Sacramento; C. S. Ford, Richmond; G. W. Genuit, Stockton; George Grimshaw, Berkeley; L. M. Hendsch, Bakersfield. Southern division, R. M. Clapp, Alhambra; Clifford Wykoff, Glendale; Joseph T. Curley, Long Beach; J. B. Davis, Pasadena; J. B. Montgomery, Whittier. The next meeting of the association will be held in Bakersfield.

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Domestic Engineering
1900 Prairie Avenue, Chicago, Illinois

ANSWERED

A few of the Questions of most general interest asked by readers and answered by our engineers

In this issue

1—How to Get the Return back above the Water Line

2 How to Cool Water in a Drinking Fountain

3—Air, Water and Steam Pressure

—1—

To the Editor:

We have occasion to figure some small heating jobs here running from 200 to 500 sq. ft. of radiation, where we barely can get the return back above the water line. We should like to know if there is any alternating trap or other contrivance outside of a condensation pump that we can use in connection with these jobs to eliminate the necessity of a pump and the noise incidental thereto.

Florida. G. J. B.

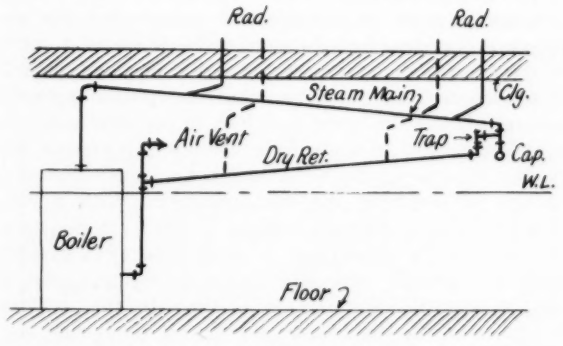


Fig. 1

Our correspondent evidently is talking about vapor systems as hot water would have no "water line" and one-pipe steam would naturally have a wet return. Assuming that the system shown in Fig. 1 resembles the conditions of which our correspondent is speaking, it will be seen that a very small pressure in the boiler will be sufficient to lift the water into the return line thus flooding the return and air binding the system.

There are two ways of meeting this difficulty, the first being by running the return back wet and carrying a ¾ in. air line overhead for the air as shown in Fig. 2. This air line may pitch down toward the boiler as shown in Fig. 2 or it may pitch up toward the boiler draining itself into the return risers going

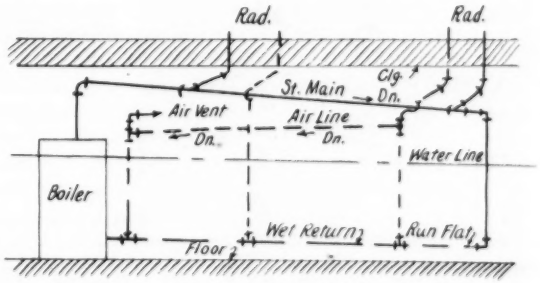


Fig. 2

down to the wet return. While this will not give a great deal of additional space it does make usable all of the space occupied by the pitch of the return line shown in Fig. 1 and is that much gain.

The other method is illustrated in Fig. 3 where an automatic return trap is used at the point where the dry return drops down to enter the boiler. There are several makes of these traps on the market and they appear from time to time in the advertising columns of this magazine. They all are of different design but in general are arranged to allow the return water to collect in the trap and be there retained until a sufficient quantity of water accumulates to lift a float which admits boiler pressure steam to the top of the trap so that the water passes down into the boiler by its own weight combined with the equal-

ized pressure. Some of these traps can be used when the difference between the return main and the boiler water line is only 8 in. and they will permit getting up real steam pressure in the boiler in extreme weather without interfering with the operation of the system. Our advice is that no vapor system

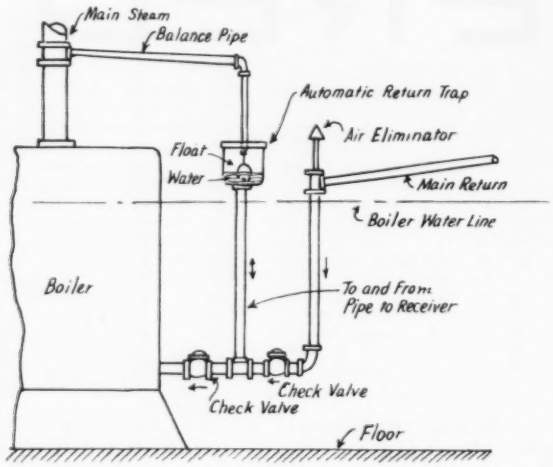


Fig. 3

should be installed without some type of automatic return trap being used to prevent trouble sometime when the pressure gets away from the operator. If this does not answer your question fully let us hear from you again.

—2—

To the Editor:

We are having trouble in cooling water in a drinking fountain; can you help us out? Here is what we have done: We have dug a pit 10 ft. down, placed 15-gal. tank at bottom connected with city supply, from bottom of tank ran connection to a ¾-in. copper pipe coil containing 120 lin. ft. with the coils placed about 2 in. apart and 3 ft. across, all packed in gravel and with the end of the coil carried to and connected with a drinking fountain above. We also ran a waste pipe from the fountain down to the copper coil in the gravel. The water stays very warm. Can you suggest any remedy?

South Dakota. H. B. C.

We can conceive of no reason for expecting the water from this drinking fountain to be at any other temperature than the water in the street main. Apparently our correspondent had something in mind when he put the tank and copper coil in the gravel 10 ft. below grade, but he failed to explain to us his object, or how he expected the device to work. The fact that he has led the waste water from the drinking fountain down to the copper coil in the gravel make us think that the idea was that the wet gravel would cool the coil. This, however, is not the case as the gravel is too far below grade to have any cooling effect from evaporation take place.

It must be remembered that this fountain is connected to the city water service and will get water practically at the same temperature as the water in the street main; no amount of coil or storage tank will alter this condition while the carrying of the water from the fountain waste back down onto the coil will be more likely to introduce higher temperature than it will lower. The only suggestion we can offer with the information which our correspondent has forwarded is to substitute an iced water cooler, i. e., a fountain with an ice chamber and a coil so that ice can be placed in the chamber from time to time and thus cool the water as it flows through the coil.

While it is possible to cool water in very hot and dry climates by hanging porous jars full of water where the wind will blow on them, this cooling is the result of evaporation and evaporation will only take place with sufficient rapidity in dry, hot climates and where the air has unobstructed access to the sides and bottom of the porous jars. This principle cannot be applied in the present case as no air movement can take place 10 ft. underground and so it is our opinion that if the drinking water supplied from this fountain must be colder than the water in the city main, then some artificial means of cooling must be resorted to such as icing, etc.

—3—

To the Editor:

The conversation in our shop the other day happened to turn to sprinkler systems of the dry pipe kind where an air pressure in the line prevents the water from entering but as soon as the air escapes by the opening of one of the sprinkler heads, water rushes into the line and, coming out of the head, puts out the fire. We were wondering how the 30 lb. of air pressure could prevent 60 lb. of water pressure from coming in and could hold the valve shut. This brought up the point that most cast iron boilers are marked "Water 30 lb., Steam 15 lb.," and one man stated that he had tested radiators with 120 lb. of water but that he would not dare to do this with 120 lb. of steam. On the other hand, a relief valve set to blow at 15 lb. will blow whether the pressure applied is water steam or air. We would like to hear what you have to say to explain this.

New Jersey. D. C.

The way the sprinkler valve is controlled is by having a balanced valve or a diaphragm valve which the air pressure operates; by a balanced valve is meant a valve so constructed that the pressure from the line (water) is applied to two pistons so that one piston pressure counterbalances the other and thus, to open the valve, it is only necessary to apply force enough to overcome the friction of moving the valve and not to apply pressure enough to overcome the inlet pressure. With a diaphragm valve a different method is used; in this case the area of the diaphragm is made somewhat greater than that actually necessary and a spring generally is used to open the valve. In closing the valve the pressure is applied to the diaphragm and against the spring and the incoming pressure.

This will be somewhat plainer if an actual example is considered: Suppose, for example, a pressure reducing

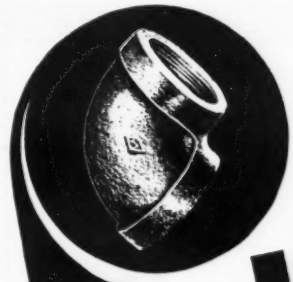
valve which is to maintain 5 lb. of steam on the low side with steam at 50 lb. on the high side. If the diaphragm on this reducing valve is made, say, 6 in. in diameter the area of this diaphragm will be 6 x 6 x 0.7854 or roughly 29 sq. in. Now if the 5 lb. on the low side of the valve is admitted on top of this diaphragm by a small ¼-in. pipe the pressure tending to close the valve, due to the push from the diaphragm, will be 29 x 5 lb. or 145 lb., while if the area of the valve closing against the steam is only 1½ sq. in. the resisting force of the steam will be 1½ x 50 lb., or 75 lb. So, if the spring is pushing up against the diaphragm with a pressure of 25 lb., there is left a difference of about 40 lb. to take the friction of moving the valve when all other items have been counterbalanced.

It will be noted that the difference between the two pressures in this case is even greater than that pointed out by our correspondent in the matter of the sprinkler valve but there is no difficulty in closing the valve not only against the steam pressure, but also against the spring pressure as well, due to the large area of the diaphragm against which the lower pressure was applied. When the pressure on the low side falls to a point where the steam pressure plus the spring pressure are greater than the diaphragm pressure, then the upward thrust of the spring and the steam will open the valve.

There are several reasons which have helped to account for the steam—15 lb., water—30 lb., often seen on cast iron boilers; one of these is that the usual limit of a low pressure steam system is 15 lb., this being established by law in some localities. Consequently if a boiler were sold which presumably is built for operating above this pressure it comes into the high pressure classification. The second thing is that no such limit is placed on water so that a higher water pressure not only is permissible but actually is necessary, on the great majority of heating jobs where hot water is used, due entirely to the head of water on the boiler and not to any pressure generated by the boiler itself.

Still another reason is that the serious results attending a steam boiler explosion do not occur when something gives way in a hot water installation. About the worst that can happen is the fracture of some part of the boiler with a leak, but water is so incompressible that the leakage of a very small amount will relieve any surplus pressure that may have been generated and without a serious damage or loss of life to accompany the break. But with steam this is not the case. The relieving of the pressure on the boiler due to a break will result in a portion of the water flashing into more steam and if the boiler is not blown apart the steam may be shot out at such velocity as to make conditions in the boiler room very dangerous.

This doubtless is what the man had in mind when he said he had tested radiators at 120 lb. of water but would not dare to use 120 lb. of steam for the same purpose; the simple fact is that a rupture occurring with steam at this pressure would be likely to kill any nearby persons due to flying bits of radiator which would be hurled about by the explosive properties of the steam while, with water, simply a crack and a leak would develop. Of course, as far as the actual pressure is concerned, it is immaterial whether the pressure is produced by steam, water, air or gas. That is why a relief valve



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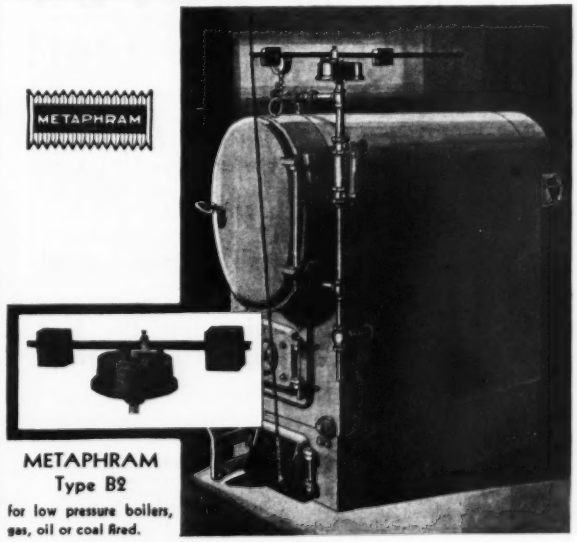

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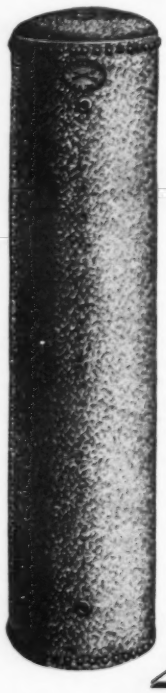

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set at 15 lb. will operate at 15 lb., regardless of what the medium may be which is exerting the pressure.

It always has seemed a little inconsistent to us to see boilers marked for different working pressure for steam and water but it must be remembered that this is for another reason than simply that of pressure. The greater safety of water under working conditions is a factor that has had a great deal to do with this.

Questions Answered and Discussed by Readers

How the Question Was Answered

The following question was asked in the issue of October 3, and the accompanying answer is by a reader:

On a one-pipe steam system the height of the cellar is such that there only will be 8 in. between the boiler water line and the bottom of the steam line at the far end, where it drops down into the wet return. If there are six connections, each with 100 sq. ft. of radiation taken off of this main, what pipe sizes would be necessary to avoid flooding the main at the far end if it is assumed that the equivalent length of pipe is 300 ft.?

How Would You Answer This Question?

A 4-row indirect steam heater for a ventilating fan handles 30,000 c.f.m. of air which comes in at zero, is raised by the first row of the heater to 25 deg. Fahr., by the second row to 45 deg. Fahr., by the third row to 60 deg. Fahr. and by the final row to 72 deg. Fahr. What should be the size of steam and return connection to each row and the size of the steam and return main from the boiler, which is 100 ft. distant? Assume a vacuum pump, steam at 2 lb. gauge and a drop in the pressure of ¼ lb. for the entire run.

Answers based upon your experience, and suitable, will be paid for and published in the November 28 issue.

—1—

IN ANSWERING this question certain working limits will have to be assumed and the size of pipe developed from those limits. For instance, although there is a total distance of 8 in. between the boiler water line and the lowest point of the steam main, all of this height cannot be assumed as being available to counterbalance the friction in the steam main. Out of the 8 in., it would be fair to allow 3 in., for the actual rise of the water due to loss of pressure in the steam main, and another 2 in., to get head sufficient to cause the water in the wet return to flow back to the boiler; this makes 5 in., and the other three inches should be allowed for safety in case the job behaves a little differently from what the figures indicate.

The problem now becomes one of designing a steam main to carry 600 sq. ft. of steam radiation with an equivalent run of 300 ft., and a drop in pressure not to exceed 3 in. of water (see Fig. 1). As nearly all

pipe tables have the drop expressed in oz., per hundred ft. or in oz., per entire length of run it will be necessary to reduce 3 in. of water to ounces before proceeding with the balance of the calculation. Since a column of water 1 ft. high produces a pressure, or head, at the bottom of 0.43 lb., per square inch, a column of water 3 in. high will produce a pressure of

$$\frac{0.43 \text{ lb.} \times 3}{12} \times 16 \text{ oz., or } 1.72 \text{ oz.}$$

and, as this is for 300 ft., the drop per 100 ft. must not exceed

1.72 oz./300 × 100 or 0.57 oz., say, ½ oz. per 100 ft. Steam pipe sizing tables seldom go below ⅛ lb. drop in the total length of run which, of course, is 2 oz. However, a drop of ½ oz., per 100 ft., is equivalent to 2 oz., drop in 400 ft. of run, so if the table for ⅛ lb., drop in 400 ft., of run is used it is the same as ½ oz., in 100 ft. A table of this character gives the following sizes of pipe:

4-in. pipe for	1,200 sq. ft.
4-in. pipe for	1,000 sq. ft.
4-in. pipe for	800 sq. ft.
3-in. pipe for	600 sq. ft.
2-in. pipe for	400 sq. ft.
2-in. pipe for	200 sq. ft.

But this will not do for a one-pipe system owing to such a system having to carry the condensate (from all

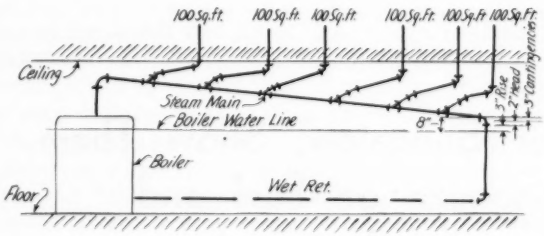


Fig. 1

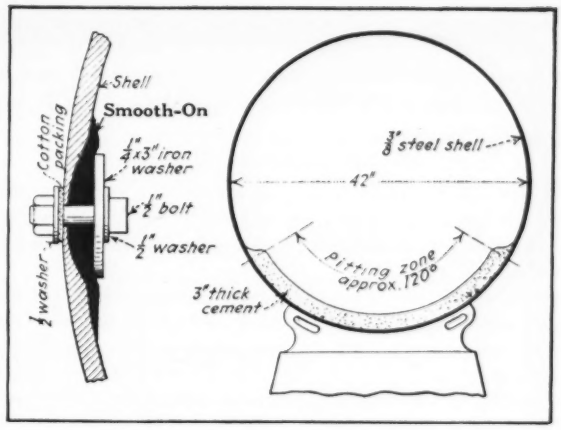
the radiators) in the bottom of the steam main. While the area of pipe occupied by the condensate at any time is not very great, still it is necessary to increase the pipe one pipe size to provide the extra area required for the flow of the condensate. This gives the corrected list of pipe sizes as follows:

1,200 sq. ft.	5 in.
1,000 sq. ft.	5 in.
800 sq. ft.	5 in.
600 sq. ft.	4 in.
400 sq. ft.	3 in.
200 sq. ft.	3 in.

The same table for a total drop of ⅛ lb., or about 2 oz., the size of the wet return is given as 1½ in. However, 2 oz. is

2 oz./0.57 oz. or 3½ in. plus

and in the problem only 2 in. has been allowed for this head, so the pipe must be increased until the allowance set will be adequate. As the friction decreases as the square root of the velocity it only remains to find the velocity which 2 in. of head will produce or to change the pipe area until the area corresponds to the square root of the velocity wanted. As the allowable friction is only 2 in., and this roughly is ½ of 3½ in., it follows that to reduce the friction ½ the velocity must be cut to



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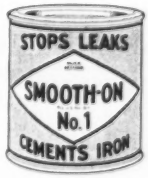

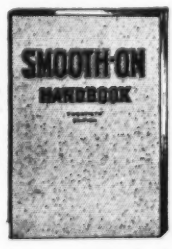

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the square root of ½ or ¾. And in order to reduce the velocity to ¾, the pipe area must be increased 1¾ or 33⅓ per cent. Now the internal cross sectional area of a 1¼-in. pipe is 1.49 sq. in. and increasing this 33⅓ per cent gives

$$1.49 \times 1.33\frac{1}{3} \text{ or } 1.98 \text{ sq. in.}$$

which will be found to be a little less than a 1½-in. pipe which has an internal cross sectional area of 2.03 sq. in. It is therefore necessary that a 1½-in. return pipe should be used.

To check this let it be assumed that 1½-in. pipe is the size which will be employed, and the amount of friction for this size will be computed. This friction, of course, must not exceed the 2 in. allowed in the original circulation for, if it does, there is something wrong with the 1½-in. size of pipe. If the return line is reduced to 1¼-in. pipe so as to raise the velocity of the return flow 33⅓ per cent, the velocity then has been multiplied by 1.33; but, as the friction increases with the square of the velocity, the friction must have increased

$$1.33 \times 1.33 \text{ or } 1.76 \text{ per cent}$$

and if the 1½-in. pipe had a friction loss of 2 in., then the 1¼-in. pipe will have a loss of

$$2 \text{ in.} \times 1.76 \text{ or } 3.4 \text{ in.}$$

and

3.4 in. of water/12 of 0.43 lb. × 16 oz. is 1.95 oz.

this checking very closely with the table from which the pipe was sized, this table being based on a total pressure drop of 2 oz.

Orifices for Steam Radiators

(Continued from Page 32)

For best results with radiator orifices the steam piping should be quite ample in size so that the pressure drop through the mains will be small. This will help to make uniform the flow of steam into radiators in different parts of the system. The piping should be well pitched and should be dripped through traps of ample capacity so that water which condenses in the mains and risers will not interfere with the flow of steam. Combination float and thermostatic traps at the ends of long mains give good results. Runouts from radiators and all other return piping should be well pitched and free from pockets so that the piping will drain by gravity. In vacuum systems, lifts should be avoided. The reason for the care with the steam and return piping is that since the flow of steam into every radiator depends upon the difference between the pressure in the radiator and the pressure ahead of the radiator valve everything which tends to alter these pressures should be avoided, otherwise some radiators will get less steam than others and some of the rooms will underheat. A trapped radiator return runout, for instance, will cause the pressure in the radiator to build up and the flow through the orifice into that radiator will be correspondingly decreased. In mild weather when a very low steam pressure is being carried such a radiator may not get any steam.

Radiator orifices as discussed here should not be confused with those used in connection with intermittent

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The
ROCHESTER CIRCULATOR

is a sturdy electrically driven unit that corrects hard-to-heat hot water systems, both old and new. Keeps flow temperatures and the return temperature at the radiator only a few degrees apart, giving very high fuel economy. No change in size or location of present radiation is needed. *In new systems steam sized radiation may be used!*

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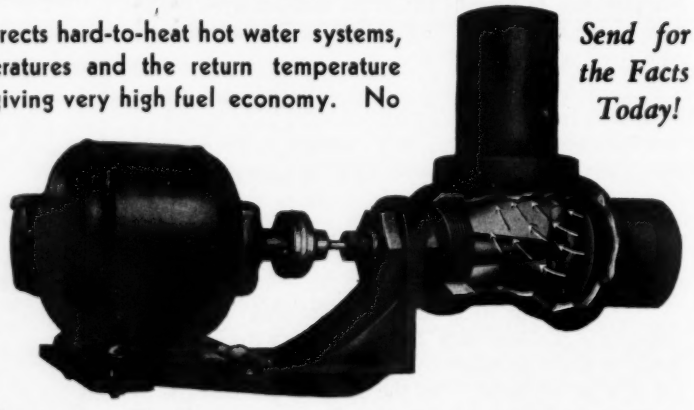

30 DAYS' FREE TRIAL

For every heating purpose—every building—large or small. An absolute guarantee and thirty days' free trial!

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Impey Bros., 2623 No. 78th Ave., Chicago, Ill.
Telephone ◆ River Grove 1306

NEW YORK OFFICE
John C. Cordner, 285 Madison Ave., New York City
Telephone ◆ Caledonia 5-7345-6-7

heating to prevent unequal heating of rooms located at different distances from the source of supply. In homes having steam heating systems equipped with oil burners, for instance, orifices are sometimes put in the radiator inlets to prevent the radiators in the room where the thermostat is located from quickly filling with steam and causing the thermostat to turn off the burner before the rooms on the second floor are up to the proper temperature. The orifices discussed in this article are intended for use in systems where the steam pressure is maintained continuously during the hours of heating.

Orifices are usually installed to reduce the cost of heating. It is possible to reduce the amount of steam used by installing orifices because the ordinary heating system usually supplies more heat than is needed. This is especially true in mild weather. Building occupants open windows when the rooms become overheated and thus much good heat is wasted. With orifices in the radiators, the building engineer can adjust the pressures so that the quantity of steam supplied is just the right amount needed and no more. As a result windows are kept closed or nearly so, rooms are kept at the proper temperature, and the amount of steam condensed is decreased. There is an additional saving in that when the radiators are not entirely filled with steam the condensate leaves at a much lower temperature than if they were filled, and thus more of the heat in the steam is delivered to the room and less carried away in the condensate. In very mild weather the temperature of the condensate leaving the radiators will be only slightly above room temperature. This of course is of greater advantage in the case of purchased steam than when the condensate is returned to the user's own boiler.

The economy to be obtained with an orifice system depends upon the care with which it is operated. It is believed that it is possible to obtain as good economy as with any other type of system or temperature control. An investigation made this year by the Commercial Relations Committee of the National District Heating Association showed that of the buildings investigated those heated with orifice systems with the pressures manually controlled had a lower average steam consumption than those heated by any other type of system.

To get good results the man operating the system must be well informed about weather conditions and about conditions in different parts of the building. It is of great assistance to have the building equipped with some type of remote-reading temperature indicating system, of which there are several now on the market.

Another advantage of using orifices is that the radiators operate at a lower temperature and therefore people can sit near them in comfort. When radiators are partly filled with steam their tops may be at or near steam temperature, but the rest of the surface is at a lower temperature. When operating the system at a very low differential pressure, the lower part of radiators will be at about room temperature.

◆

Death of William Pritchard

William Pritchard, of Missoula, Mont., for many years a plumbing and heating contractor in that city, died recently. He was in his sixty-third year at the time of his death.

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A · NEW · SHOWER · STALL · DOOR
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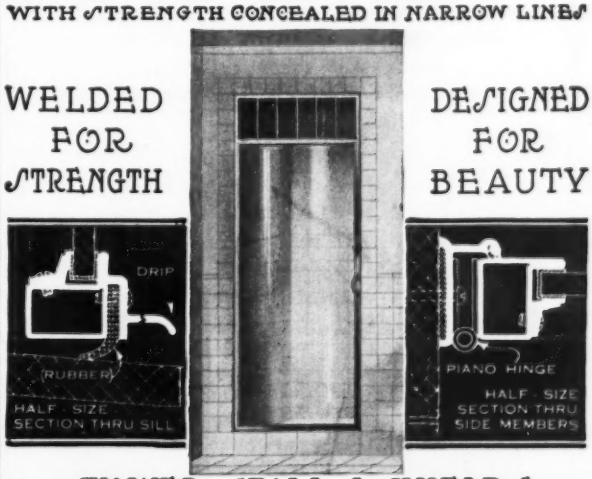

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To help you, cash checks in the 24 United Hotel Cities. This coin instantly establishes your identity... avoids delay in checking out. No one else can use it.

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Mail Coupon Today. Secure this extra service for yourself and others. There is no charge for issuing or using this coin.

UNITED HOTELS

The Proof that the House Trap Is Unnecessary

(Continued from Page 39)

cepting traps were examined in different localities, 23 per cent of them being found stopped at the time of examination, or to have been stoppd previously, and in all cases the existence of such conditions was unknown to the tenants. The report points out that this condition shows "the necessity of finding an effective remedy if the trap is essential, or of considering its abandonment if it is not essential."

Thus far in our discussion we have confined our attention to the report by the English Government Commission. In this country investigation by the Hoover Commission also has produced very convincing testimony against the house trap.

On page 53 appears the following statement:

"Whatever be the supposed advantages of the house trap, or running trap, as a protection of the house drainage system against the air of street sewers, the experiments made by Doctor Hunter indicate that this device produces an effect similar to a partially submerged drain. Whether vented or not, it decreases the capacity of the house drain."

Also on page 220 is the following, with considerably more which we are not including:

"The committee finds that this trap and the fresh-air inlet are in most cases a needless expense. Experiments under the committee' supervision have shown that the house trap interferes with the flow of sewage and air movements in the house drain. It increases the possibility of trouble from back pressure in the soil stack. Its omission gives opportunity of inoffensively ventilating the street sewers through a multiplicity of outlets.

"The recommendation in the tentative report of the first edition that installation of the main or house trap and fresh-air inlet be discontinued aroused much discussion. Of the respondents who discussed this matter in particular, the greatest number favor the omission of the house trap, a few would retain it, and a few seem to think that its advantages and disadvantages are about equal."

There is one condition under which both the English report and the Hoover report find good reason for using the house trap, and that is to prevent the discharge of sewer air from roof pipes entering the windows of neighboring buildings. This situation is shown in Fig. 1. Concerning this phase of the subject, the Hoover report has the following:

"It is argued that in cities where house traps are now generally in use the installation of systems not thus equipped exposes occupants of neighboring buildings to concentrated fumes from sewer systems otherwise unvented. This may, under certain circumstances, justify the requirement of a house trap, but where a reasonable distance intervenes between roof vent and neighboring windows the committee thinks that use of the house trap should be optional."

Many city plumbing codes have a provision which makes necessary the use of a house trap in a low building whose roof pipes end in such close proximity to windows in neighboring higher buildings as to create the

possibility of entrance of foul odors. In a great many such instances, however, the difficulty may be overcome by changing the course of the roof pipes in the lower building, or by extending them above the windows in the high building, as in Fig. 2.

There is much faulty practice relative to the main trap and fresh air inlet, which does not increase our respect for either. Many plumbing codes demand only the trap, which may be installed without the fresh air inlet. A pilot drawing of a large eastern city shows the practice of discharging a refrigerator drain into the fresh air inlet, as seen in Fig. 3. Another pilot drawing shows a rain leader connected into the fresh air inlet, as in Fig. 4. Not long ago we saw an installation, illustrated in Fig. 5, in which a rain leader was actually installed with the idea of its acting as the fresh air inlet. Finally, within a week of the time this article was written, we saw in a new country plumbing system, a bathroom stack carried directly into the hub of the house trap. This is shown in Fig. 6. Whether it was expected that the stack could do its work as a drainage pipe and at the same time as a fresh air inlet, we do not know, but it looked that way.

In conclusion, we want to say that we see very little reason or excuse for using the house trap, and feel that its use is of value only in unusual cases.

◆

The Slattery Plumbing and Heating Co., of Denver, Colo., has been awarded the plumbing contract on the addition to the Mercy hospital. The job calls for approximately 205 fixtures.

The Hoover Code and the Wet Vent

(Continued from Page 56)

ing in agreement with the regulations of one city will be acceptable in all respects to any other town, for even among municipalities working under the Hoover code, there will generally be found variations in practice.

The letter quoted at the beginning of this article seemed to look upon the wet vent as necessarily wrong practice, and it has been our endeavor in this article to bring out the point that when installed under correct conditions the wet vent is now very generally looked upon as acceptable practice, and as a welcome simplification in plumbing installations in danger of becoming more complicated than necessary.

Refrigerator Connections and Wet Vents

(Continued from Page 60)

Loading up a job with all the complication it will stand is not the right idea from any standpoint, and a comparison made between this layout and that of Fig. 1 should be beneficial.

The use of cleanouts also, according to our way of looking at it, is another evidence of extravagance.

Simplification of plumbing, with due regard for efficiency and safety is a good mark to aim at.

◆

W. S. White, master plumber of Denver, Colo., has six residential jobs under way, which call for a total of seventy-one fixtures.

TEMPERED steel wire brushes made by Worcester Brush & Scraper Company have long been known as the quality brushes of the industry. Yet they cost no more.

Every brush—and the line is complete—is made in accordance with tried and true design. Every wire in them has passed a rigid inspection. The wires *cannot* come out.

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Greatest Efficiency Yet Reached!

ENTIRELY new and different design in an efficient, permanent Automatic Hot Water System. Lifetime copper heating element is submerged in vitreous enameled tank. Tests reveal an efficiency never before attained—dependable, continuous supply of clean, hot water assured for the life of the building.

NEW FOLDER FREE

Write today for illustrated literature and complete details which point the way to profits for you.

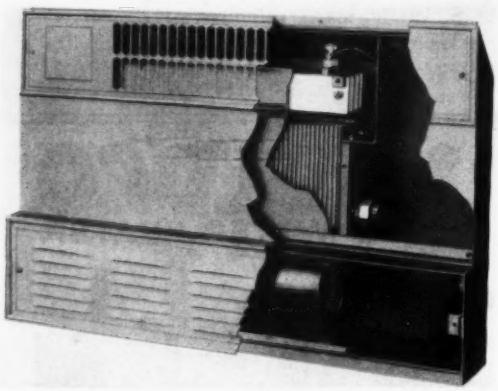
The Youngstown Welding & Engineering Co.
3600 Oakwood Ave. YOUNGSTOWN, OHIO

Items for STORE, SHOP *and* JOB

AS the winter season approaches, it is natural to find manufacturers of heating equipment more active. They are offering to the dealer items of changed or new design by which he can give his customer a better heating service.

Heating Unit Uses Both Steam and Electricity

A combination of two types of heating elements in the same built-in cabinets that fits back into the wall or also in free standing cabinets is announced. An electric and a steam heating element can be operated in conjunction with each other, or separately as may be desired. They can be used together to give greater heat in emergencies. The motor fans may also be operated independently of

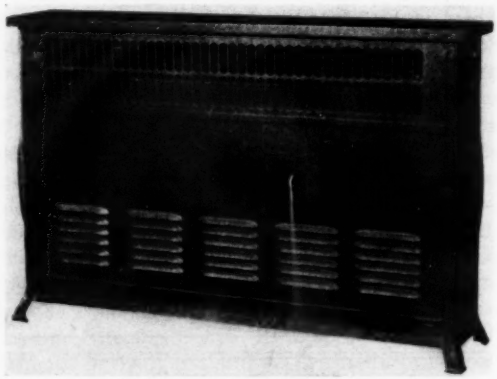


Built-in Steam and Electric Heating Unit

the heating elements for cooling and air circulation in hot weather.

The main purpose of the combination, however, is to furnish heat electrically, on cool spring or fall mornings and evenings, when the central heating plant is not in operation. A control switch brings a steady flow of warmed moving air without the need of regulating the boiler. This unit is said to be particularly adaptable to all living or work rooms where the chill or dampness causes physical discomfort and unhealthful atmospheric conditions. The cost of operation electrically is said to be low.

When the central heating plant is started for the season, there are no parts to disconnect. The electric elements are not used unless some emergency calls for more heat than is ordinarily used, or in the event the central plant fails. The combination unit in various sizes has capacities ranging from 1,500 to 5,000 watts in the electric elements and from 20 to 80 equivalent square feet of direct radiation in steam heating capacity.



Cabinet Type of Heating Unit

An air washing and humidifying attachment is also furnished when desired.

Thermostat to Permit Flexible Control

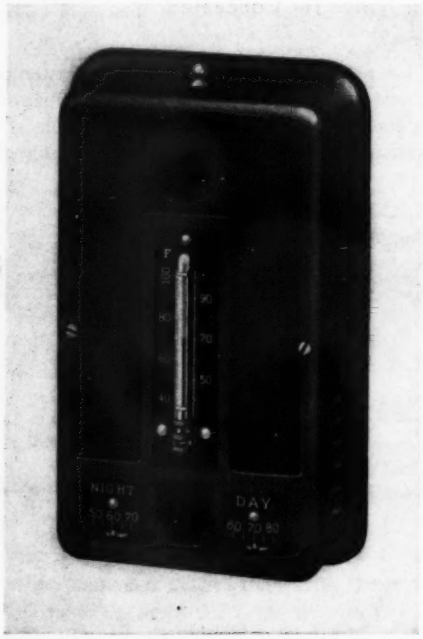
A thermostat designed for use in buildings where it is economical and possible to have the temperature throughout or in any parts of, the building lower at night than in the daytime, has recently been developed. This consists essentially of two bimetallic-element units

Readers will find in this department news of our industry's progress in the manufacture of equipment. You can read of the efforts of manufacturers to develop products which will increase customer demand, will make shop methods more efficient and will simplify installation.

A letter to the editor of "Domestic Engineering" will bring you the name and address of the manufacturer of any product in which you are interested.

such as are found in the room thermostat. One element is adjusted to control a range from 60 F. to 80 F. and the other the relatively lower range of from 50 F. to 70 F. If desired, other ranges can be supplied to meet requirements.

A switch inside of the thermostat, actuated either by electro-magnets or by a manual lever on top of the case, determines which of the two units shall control the temperature of the room. In installations where large numbers of these thermostats are used in the same building, change of control may be accomplished simultaneously in all thermostats by means of the switching magnets with which each is equipped. These magnets are connected to an electrical system controlled by a master switch in the engineer's office, or other convenient place, making possible the changing of control from one range to the other. The manual switch upon each thermostat permits the placing of individual instruments on either day or night range by occupants of the room at any time. This is convenient if a room is to be occupied during the evening when the rest of the building has been placed under control of the night range of the thermostat.



Thermostat for Flexible Control

Gas Conversion Head for an Oil Burner

A gas conversion head has been designed by an oil burner manufacturer to replace his oil nozzle. It fits in the present manifold without changing the burner other than the application and piping necessary for the hook-up. The change can be made quickly and simply.

The gas enters a mixing chamber inside the burner manifold and is mixed with air from the blower through an air adjuster port which is a part of the gas burner head.

A feature is the control valve which is made a part of the replacement manifold cover and which is controlled

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Every genuine C. S. B. Head is stamped with the fusing degree and the date of seal. Be sure it's a C. S. B.

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We will be glad to furnish you with records which show where Flash Heaters have been installed and what they have done.

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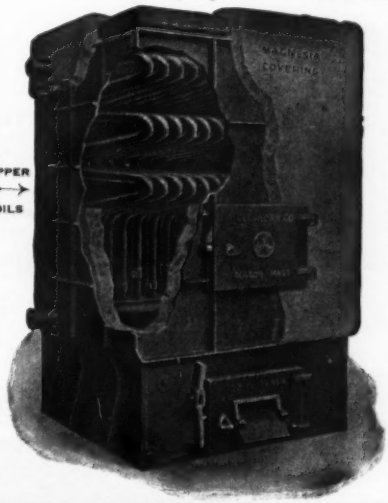

Flash Heaters for larger installations such as apartments, clubs, hotels or wherever great quantities of hot water are constantly needed, will be found economical — efficient, easy to operate and absolutely dependable.

Write for complete details.

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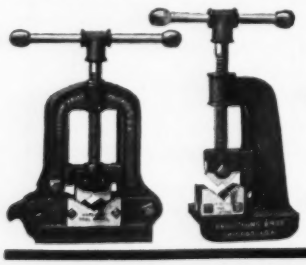
Vises exactly suited to special conditions

There are four different types of pipe vises in the ARMSTRONG BROS. Line of "*Better* Pipe Tools": The Standard Hinged Vise with the *unbreakable* drop forged steel hook, the *Patented* Chain Vise, and the Heavy Duty and Open Side Vises illustrated here.

The ARMSTRONG BROS. Hinged Vises are made in sizes that range from ⅛ inch to 7 inch pipe capacity. Bodies and bases are of Certified Malleable Iron; jaws of hardened tool steel with milled teeth, heat treated, oil tempered and tested. Screws and handles are of steel with double wear thread.

The ARMSTRONG BROS. Open Side Vise is made of similar stuff and within its range combines strength, quick action, convenience and solid gripping power.



Write for Catalog P-10 which describes the "BETTER Pipe Tools" distinguished by the Arm-and-Hammer Trade Mark.

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"The Tool Holder People"
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ARMSTRONG BROS. TOOL CO. LTD.
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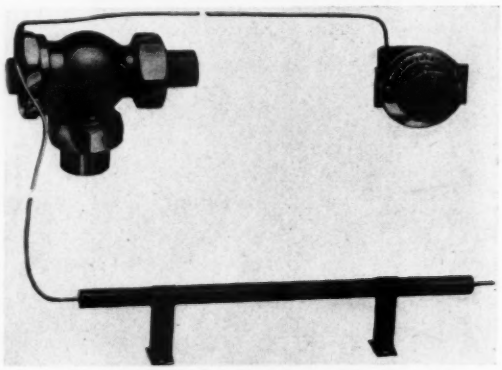
PUT Bead Chain of nickel silver on a waste and overflow and see the difference that it makes! It's a sure hit with everyone, and it holds everlastingly fast. Always clean and sanitary too—it's made the use of chain and stopper popular with everyone, and costs but little more than ordinary chain. Ask your jobber.

THE BEAD CHAIN MFG. COMPANY, BRIDGEPORT, CONNECTICUT

by oil pressure from the oil circulating pump. This constitutes the entire control of the gas in that the amount of gas being consumed and the closing of the valve during intermittent periods is all accomplished through the adjustment of one set screw on the side of the valve. Ignition for the gas burner is obtained by an electric spark with the use of the same ignition transformer with which the oil burner was originally equipped and is designed to eliminate the necessity of a gas pilot.

Radiator Valve for Concealed Radiation

With interest growing in automatic room temperature control systems for larger buildings, a manufacturer makes a timely offering for radiator control. For concealed radiation, there is a balanced heat control which



Valve for Enclosed Radiation

may be enclosed entirely within the radiator cabinet, yet permit close room temperature regulation.

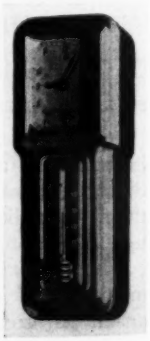
These new valves may be used on any two-pipe steam, vapor or vapor-vacuum heating system. They are small enough to be fitted to any radiator without changing its position. They are also furnished in both globe and angle types to suit installation requirements.

In these valves, change in room temperature causes change in vapor pressure within the thermostat, operating the steam valve to increase or decrease steam flow to bring room temperature back to the desired level.

By the use of two bulbs located inside the radiator cabinet, the valve regulates room temperature by means of both the temperature of the air entering the enclosure and the temperature of the air leaving the cabinet.

Electric Clock with Thermostat Attached

An instrument which combines the thermostat with an electric clock is now offered. The clock is operated from the house lighting circuit, gives accurate time-keeping and changes the day and night setting of the thermostat. The winding of the clock as a step in insuring the operation of the thermostat thus becomes unnecessary.



Combined Thermostat and Electric Clock

Thomas D. Stafford, Chas. H. Alexander Co., Grand Rapids; Glen H. Wald, Scott Valve Mfg. Co., Detroit, and M. J. Hayden, Garden City, at annual convention of Michigan Master Plumbers' Association, held at Muskegon

The Voucher System

(Continued from Page 84)

1. All invoices are verified and checked.
2. Vouchers are prepared for all invoices and entered.
3. Vouchers are filed previous to payment.
4. Paying of vouchers.
5. Paid vouchers are filed.
6. Vouchers are indexed.

Some of the advantages of a Voucher System are:

1. Gives a detailed analysis of all purchases.
2. Saves a great deal of labor by eliminating the creditors of accounts payable ledger.
3. It secures an up-to-date entry of all liabilities.
4. It localizes responsibility by showing authority for the auditing, paying, and entering of the items.
5. It secures a receipted bill for all disbursements of cash.

Heating Residences and Small Structures

(Continued from Page 51)

boiler. In Table VI is given a schedule which covers anything up to six stories high, this being as high as hot water usually is employed although the writer has put in hot water jobs up to eight and nine stories. The pressure, however, becomes so great with these heights that it is generally considered inadvisable to employ hot water much over three or four stories. Inspection of this table shows that a ¾-in. pipe will carry 40 sq. ft. on the first floor, 50 sq. ft. on the second, 60 sq. ft. on the third, 70 sq. ft. on the fourth, and so on. The risers are sized on this schedule and the mains are sized according to the factor method, which for the residence in question would list as shown on the next page.

Comparison of these sizes with those used on the actual installation indicate that the pipe sizes on the job in some cases are about one pipe size larger than the ones indicated as necessary by calculation. This would indicate that this is one of the jobs sized on the valve area basis about which considerable already has been said. However, working the sizes out by the valve area method gives the results shown in the table which is published on page 133.

It will be seen that, while the factor method of sizing gives sizes somewhat smaller than those used on the job, the valve area method gives sizes a trifle larger. Apparently the designer of this system either compromised

"DAHLQUIST"

Turbo-Aquatherm

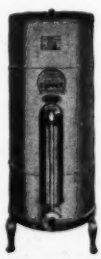
The Dahlquist (U. S. Patent No. 1,762,215) issued June 10, 1930, covers a device called the Turbo-Aquatherm which takes advantage of the velocity of the incoming cold water in the hot water storage system to create a suction and whirl which constantly sweep and scour the bottom of the boiler, carrying every particle of foreign matter out of the system.

Gas Side-Arm

Which Do You Prefer?

Muddy hot water unfit for use—or fresh, clean hot water, fit for cooking and drinking purposes? People who know about the Turbo-Aquatherm will not install a hot water storage system without it.

All storage tanks for hot water are actually sediment traps. The constant accumulation of sediment (mud) not only makes the hot water stale and unsanitary, but eventually clogs up the coils, water fronts, circulation pipes, and interferes with the free circulation of the hot water, which eventually causes the coils and the bottom of the storage system to burn out.



Automatic Electric

Take Advantage of This Offer

The Dahlquist Manufacturing Company will supply the new patented Turbo to the trade for installation in boilers now in use. Here is an opportunity to remedy complaints and secure an extra profit. When you send in your next order for a Dahlquist Copper Boiler of any type, have it equipped with the new TURBO-AQUATHERM.

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Easily Equal to the Toughest Job

HIGH pressure or low pressure, factory, home, school or office building, a Sherwood Ball Cock in the closet tanks, means that even the toughest job is "licked."

No whistling or gurgling and NO LEAKING—these are the points that have distinguished the Sherwood and put it up before the old, uncertain ball cocks of other, less scientific days.

Furnished with any size shank for any standard job. Through your jobber with the least delay.

SHERWOOD BRASS WORKS

Jefferson and Mt. Elliott Aves.

DETROIT, MICH.

REPRESENTATIVES

SHERWOOD Ball Cocks

Ozite

PIPE COVERING

Prevents Freezing

Now is the time to cover cold water pipe-lines with Ozite Pipe Covering—and prevent danger of freezing for all time. It prevents condensation or "sweating" too. Made of 100% pure sterilized cattle hair—it forms a high efficiency insulation at moderate cost. Easy to handle and apply. Write for sample.

AMERICAN HAIR & FELT COMPANY
Merchandise Mart » » Chicago

Have You Any Used Tools?

No doubt you have. Chances are they are laying somewhere around your shop. Possibly new tools have replaced the old. These old tools will bring you *dollars* if advertised in the For Sale columns of DOMESTIC ENGINEERING. Some plumber in some other locality may be waiting to obtain these tools, in good condition, at reduced prices. The very low rate of 8 cents per word makes the Classified Page a good buy.

Domestic Engineering
1900 Prairie Ave. CHICAGO

on the two methods or used an entirely different means of sizing which gave him the pipes as indicated in the drawing.

Circuit to the rear of the building:

Radiator No.				
1	Second floor ..	70	sq. ft., 1	-in. conn.
2	First floor ...	24	sq. ft., ¾	-in. plus 1 size
3	First floor ...	77	sq. ft., 1¼	-in. conn.
4	Second floor ..	66½	sq. ft., 1	-in. conn.
5	First floor ...	105	sq. ft., 1¼	-in. conn.
6	First floor ...	132	sq. ft., 1½	-in. conn.
		474½	sq. ft.	

Circuit to the front of the building:

Radiator No.				
7	First floor ...	77	sq. ft., 1¼	-in. plus 1 size
8	Second floor ..	66½	sq. ft., 1	-in. conn.
9	First floor ...	44	sq. ft., 1	-in. conn.
10	First floor ...	33	sq. ft., ¾	-in. conn.
11	First floor ...	49	sq. ft., 1	-in. conn.
12	Second floor ..	70	sq. ft., 1	-in. conn.
		339½	sq. ft.	

814 sq. ft. total of all radiation

Size of Mains by Factors:

Radiator No.	Connection Inches	Factor	Sum of Factors	Pipe Size Inches
1	1	10	10	1
2	1	10	10	1
Main			20	1¼
3	1¼	20	20	1¼
Main			40	2
4	1	10	10	1
Main			50	2
5	1¼	20	20	1¼
Main			70	2½
6	1½	30	30	1½
Main			100	2½
7	1½	30	30	1½
8	1	10	10	1
Main			40	2
9	1	10	10	1
Main			50	2
10	¾	5	5	¾
Main			55	2
11	1	10	10	1
Main			65	2½
12	1	10	10	1
Main			75	2½
Combined main for both circuits			175	3

How to Favor Radiators on Lower Floors

In working on hot water systems with radiators located on more than one floor level there are several other expedients which are employed to prevent the higher radiators—with the greater circulation head—from robbing those on the lower levels with a lesser circulation head. The first of these is the way the branch is taken off of the main in the basement; all the first floor radiators—except those of unusually large size—are taken off with a connection pointing upward at 45 degrees as shown in A of Fig. 8. Large first floor radiators and all risers to the second floor are taken off as shown in B of Fig. 8; a 45 degree down branch, as shown at C in Fig. 8, is never employed except on overhead mains such as occur in overhead down feed installation of which the bungalow system was an example.

The second thing which is done is to reduce the size of the mains on upfeed systems only at points where the first floor radiator connections are taken off and never where a riser is connected. The third thing which is done is to give each lower radiator on the way up the riser a preference over the higher radiators by allowing the water to flow straight up and down to and from the lower radiator and forcing it to make two right angled turns to go to, or return from, the upper radiators. This is illustrated in Fig. 9. It also is a good practice to drill a 1/8-in. hole through the radiator valves so that sufficient circulation is maintained—even when the radiator is closed off—to prevent freezing.

Size of Mains by Valve Area Method:

Radiator No.	Valve Size	Valve Area	Sum of Areas	Required Size of Pipe
1	1	0.86	0.86	1
2	¾	0.53	0.53	¾
Main			1.39	1¼ + 1 size = 1½
3	1¼	1.49	1.49	1¼
Main			2.88	2
4	1	0.86	0.86	1
Main			3.74	2½
5	1¼	1.49	1.49	1¼
Main			5.23	3
6	1½	2.04	2.04	1½
Main			7.27	3
7	1¼	1.49	1.49	1¼ + 1 size = 1½
8	1	0.86	0.86	1
Main			2.35	2
9	1	0.86	0.86	1
Main			3.21	2
10	¾	0.53	0.53	¾
Main			3.74	2½
11	1	0.86	0.86	1
Main			4.60	2½
12	1	0.86	0.86	1
Main			5.46	3
Two Mains			12.73	4

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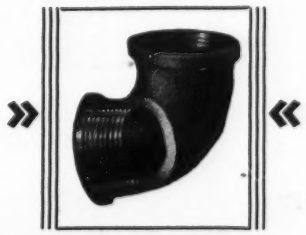

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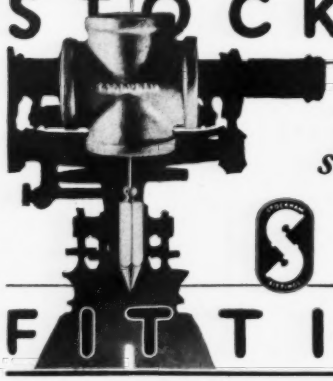

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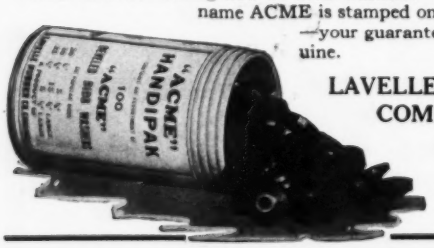

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New Trade Literature

"X" Laboratories Issue New Circular

"X" Laboratories of New York City have issued a circular entitled "How to Reduce Fuel Consumption in Your Heating Plant." It is designed to get heating plant flushing jobs for heating contractors. It calls attention to the fact that scale in a boiler lowers its heating efficiency, and it points out that ⅛ in. of scale will make it necessary to burn 25 per cent more fuel. This circular is prepared in such a manner that the name of the dealer can be included.

Burners for Oil, Gas and Combination Oil and Gas

The Burner Division of Bryan Steam Corporation of Peru, Ind., has issued a 16-page catalog, 8½x11 in., illustrating and describing in detail its burners for oil, artificial gas, natural or mixed gas, burner controls and accessories.

Lubricated Air Cocks

The Haydenville Co., of Haydenville, Mass., has prepared an envelope stuffer describing and illustrating its line of lubricated air cocks. The company's line of cast iron manifolds or distributors is also illustrated and described.

Pamphlet on Globe and Angle Valves

Stanley G. Flagg & Co., Inc., Philadelphia, Pa., has issued a pamphlet which is printed attractively in several colors and contains illustrations and descriptive matter pertaining to the company's line of bronze globe and angle valves, globe check valves and bronze service gate valves. The different types of valves are illustrated in cross-section so that the working parts may be seen.

Folder of Automatic Florzone Heating Co.

The Automatic Florzone Heating Co., Conshohocken, Pa., is distributing a folder describing its automatically controlled orifice system of forced hot water heating by gas. The folder contains complete information concerning the system, including diagrams of typical installations in a residence and an apartment house.

Catalog of Piping and Valves

Semet-Solvay Engineering Corporation of New York City has issued a 48-page catalog, 8½x10¾ in., illustrating and describing its piping and valves. Much space is devoted to welded steel pipe and fittings, sleeve joints, flanges for all purposes, Van Stone joints, expansion joints, gate valves, check valves, butterfly valves. The value of the catalog is enhanced by the addition of a large number of tables of dimensions.

New Folder of Hercules Chemical Co., Inc.

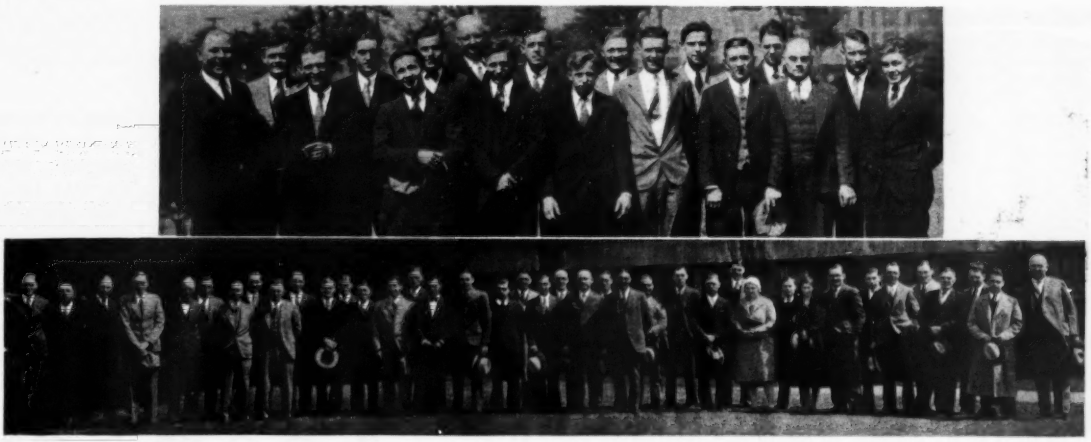
Hercules Chemical Co., Inc., of New York City has just issued a four-page folder about its new storage tank cleaner which is described as a rust remover that insures a clean and clear water supply. Directions for its use are given in this folder. Another folder tells about this company's soldering paste.

Wallhanger About Fuel Savers

Veribest Fuel Saver Manufacturers, Inc., of Dayton, Ohio, have issued a wallhanger, 14x11 in., illustrating and describing its fuel saver. The hanger also gives directions for firing.

Gas-Fired Unit Heaters and Automatic Gas Steam Radiators

Automatic Gas-Steam Radiator Co. of Pittsburgh, Pa., has published a 32-page catalog, 8½x11 in., devoted to illustrations and descriptions of its line of gas-fired unit heaters and automatic gas steam radiators. Tables of roughing-in dimensions and suggested layouts for venting are included in the catalog as well as many halftone illustrations of apartment buildings, churches, schools



Two groups of plumbing apprentices and plumbers who recently visited the plant of Kohler Co., at Kohler, Wis., photographed as they were making an inspection trip through the company's plant. The young men in the top picture are from the Watertown, Wis., vocational school, accompanied by H. Pommerenck, itinerant plumbing instructor. In the lower picture are apprentices and plumbers from vocational schools along the western shore of Lake Michigan, at the Kohler factory

and residences in which this company's heater units and radiators are installed.

Sanitary Drains, Traps and Fittings

J. A. Zurn Manufacturing Co. of Erie, Pa., has just mailed the trade an eight-page catalog, 8½x11 in., of its sanitary drains, traps and fittings. Among the items listed are: Drains with trap and drum bodies, drainage P traps for use with any drain, pipe adapters, extra heavy floor drains and traps combined with removable sediment buckets, floor drains and traps combined, and floor drains with and without back pressure device. This company has also issued folders illustrating and describing its plug and ferrule and its cleanout plug and ferrule, as well as its adjustable steel boiler stand and its insertable hubs for adapting screwed connections to slip and calk.

Equipment for Hot Water Heating Systems

Kainer & Company of Chicago have issued a four-page folder illustrating and describing their equipment for hot water heating systems including combination gauges and thermometers, relief valves, pressure governors, etc., etc.

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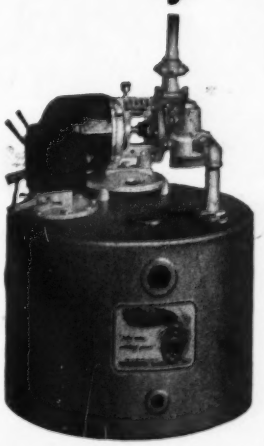

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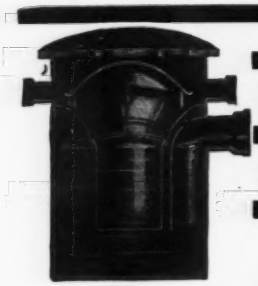

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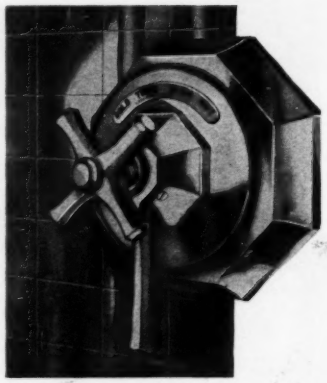

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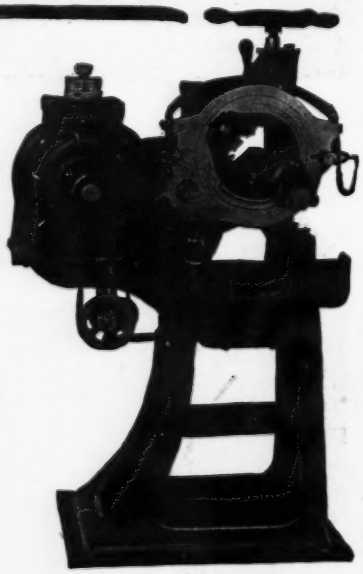

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Large Construction Projects

Even though new construction is at a low ebb compared with recent peak years, the fact remains that new projects are being started every day. Listed below are just a few of the larger building operations, either contemplated or only recently started.

Syracuse, N. Y.—Frederick T. Ley & Co., Springfield, Mass., have been awarded the general contract on the $400,000 building for the Syracuse Lighting Co.

Syracuse, N. Y.—The general contract on the new Grant school building, Grant boulevard, has been awarded F. McLellan Co., Syracuse, on a bid of $473,735.

Cambridge, Mass.—A war memorial auditorium is planned by this city, to seat 2,500 people. A site has been selected at Cambridge and Peabody streets for the building, which is expected to cost $1,000,000.

South Hadley, Mass.—Mount Holyoke College has formulated a construction program which includes a new chapel to cost $2,000,000 and an addition to Williston Library to cost $750,000. Cram & Ferguson, New York, are architects for the chapel, and George F. Newton, 6 Beacon street, Boston, for the library.

Holyoke, Mass.—The Young Men's Christian Association will have plans prepared early in 1932 for the proposed new $400,000 association building. A. W. Morse is general secretary.

Andover, Mass.—Architect Charles A. Platt, New York, has drawn plans for a 3-story and basement infirmary unit, to be erected for the Phillips Andover Academy at a cost of $250,000. The project is planned for spring construction.

Colorado Springs, Colo.—Meads & Mount of Denver have the general contract on the new dormitory building at the Colorado School for the Deaf and Blind, to cost $100,000.

Brooklyn, N. Y.—An apartment house to cost $200,000 is to be erected at 3033 Nathan street by the Garden Operating Co., Inc. The architect is J. Millman.

San Francisco, Calif.—Ground was broken early this month for the new $750,000 Health Center building, the latest addition to the Civic Center, in this city.

Cambridge, Mass.—This city has commissioned Architect Ralph Harrington Doane, 60 Batterymarch street, Boston, to prepare plans for the new Rindge Technical high school to be erected at Broadway and Irving street at an estimated cost of $1,200,000. J. J. Terry is superintendent of public buildings and M. E. Fitzgerald, superintendent of schools.

Norwich, Conn.—The Connecticut State Tuberculosis Commission has taken bids for infirmary, nurses' home and a physician's cottage, all of which with equipment will cost approximately $515,000. Cudworth & Thompson, 257 Main street, Norwich, are the architects. The new units will become a part of the Laurel Heights Sanatorium, Shelton, Conn.

Grand Forks, N. D.—The Northwest Heating & Plumbing Company, 131 South Third street, Grand Forks, has been awarded the plumbing and heating contract for the new junior high school, costing $275,000, with a bid of $38,491.

Duluth, Minn.—Plans have been announced by the Duluth Steam Corp. for a $1,500,000 central heating plant to be built at Lake avenue and Commerce street. The plant will generate heat for the downtown district.

Newberry, Mich.—Plans are being prepared for a state hospital unit to cost $360,000. Derrick Hubert, Menominee, is the architect.

Charles City, Ia.—The Wheatland Co., Cedar Rapids, has been awarded the plumbing and heating contract for the new 2-story high school being built at a cost of $275,000. Jacobson & Jacobson, 212 Wesley Temple building, Minneapolis, Minn., are the architects.

Lincoln, Nebr.—Acme Plumbing Co., 1935 O street, Lincoln, has been awarded the contract for the plumbing and heating in the new $200,000 city building, on a bid of $28,936. Davis & Wilson, 525 South 13th street, are the architects.

Watertown, N. Y.—A new six-story building costing $350,000 will be built by the Medical Arts Building Corp. D. D. Kief, Watertown, is architect. Bids will be called for soon.

Chicago, Ill.—As a companion project to the new Chicago postoffice, a $2,000,000 heating plant, to serve the postoffice building, the Chicago Union Station and adjacent railroad facilities, is to be built by the Union Station Company, it was announced recently.

Syracuse, N. Y.—Pierce C. Shane has received the plumbing contract for the new $750,000 Grant Junior high school building here, on a low bid of $41,131. The heating contract for the same structure was awarded to the Fred Bradt Co., of Syracuse, low bidder at $85,389.

Troy, N. Y.—C. P. Boland & Co. have been awarded the general contract for construction of an addition to St. Joseph's Seminary here. The cost will be $400,000.

Milwaukee, Wis.—Excavation work has been started for the first unit of the proposed $1,500,000 Whitefish Bay high school. The first unit will cost $450,000.

Peoria, Ill.—V. Jobst & Sons have been awarded the general contract on the Theodore Roosevelt junior high

A part of the group picture taken at the fifth annual family picnic given recently by the Tri-City Plumbing and Heating Development League, at Credit Island, Davenport, Ia.

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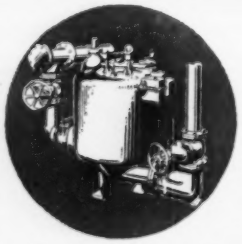

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school, on a bid of $455,737. Crowley Bros. have the plumbing contract at $37,500, and the Hitchcock Sprinkler & Heating Co. has the heating and ventilating contract, on a bid of $97,181.

Lemont, Ill.—John R. O'Connor Co. has been awarded the general contract for the school convent and chapel for the Sisters of St. Francis here. Construction will probably start next spring. The cost is estimated at $300,000.

New York, N. Y.—Work on plans for the new $3,000,000 Franklin K. Lane school has begun in the office of School Architect Walter C. Martin.

Baltimore, Md.—Preliminary plans for a new Southeast Baltimore junior high school to be erected at a cost of $800,000 have been approved by the School Board and Public Commission. Wyatt & Nolting are the architects.

New York, N. Y.—The A. L. Hartridge Co. has the general contract for the new building of the Wall Street Journal at 42-44 Broad St. The cost is $400,000.

Columbia, S. C.—Bids to erect the new $1,300,000 Veterans' hospital will be opened November 10 by the Veterans' Administration, Washington, D. C.

Washington, D. C.—The Southern Construction Co. will construct a $500,000 apartment building at 3726 Connecticut avenue, northwest. M. Mesrobian, Washington, is the architect.

Longview, Tex.—Work is expected to start the first of next year on a new $175,000 high school. Mark Lemmon, Dallas, is the architect.

Wichita Falls, Tex.—The H. W. Underhill Co., Dallas, has been awarded the general contract on the new Federal building here, on a bid of $408,860.

Cleveland, Ohio—An apartment house costing $125,000 will be erected in the Shaker Square district by George R. Gall.

Oak Park, Ill.—Work is expected to start next spring on the new Federal building, to be built at a cost of $400,000.

Aurora, Ill.—Bids will be opened in Washington, D. C., on November 3 for construction of the new Federal building here. The cost is estimated at $395,000.

South Bend, Ind.—Excavation work was recently started for the new $1,000,000 postoffice. James I. Barnes, Logansport, is the general contractor.

Oakland, Calif.—Contract for construction of the $112,000 exposition building for the annual horse show has been awarded to R. W. Littlefield.

Washington, D. C.—Ground was recently broken for the new building of the Interstate Commerce Commission, which will cost $4,500,000. Altogether, four huge government buildings will be included in the project, to be erected at a total cost of $21,550,000.

Business Changes by Contractors

Portland, Ore.—Thomas E. Hulme, who has been engaged in the plumbing business here for many years, has taken a long-term lease on 1,500 sq. ft. of floor space on the first floor of the Ramapo hotel, 108 Fourteenth street.

St. Helens, Ore.—George Lund and J. B. Harrington have purchased the plumbing and heating business of J. G. Straight & Co., in this city.

Salt Lake City, Utah—Edmond G. Harris, veteran plumbing and heating contractor, has sold his business to John W. Dudley. Mr. Harris has been connected with the industry for approximately forty years, for the past twenty-two years having been located at 143 East Second South street. He is a past president of the Salt Lake City Association of Plumbing and Heating Contractors. Mr. Dudley has been connected with the industry for about thirty years, the last twelve years having been secretary of the Will Rees Plumbing Co. He was the first secretary of the Utah State Association of Sanitary and Heating Engineers.

Mt. Vernon, Ia.—Dale F. Johnson, plumbing and heating contractor, has purchased the hardware store of R. H. Lowe, but Mr. Lowe will continue to operate the store, while Mr. Johnson gives his attention to the plumbing and heating business, as heretofore.

New Contractors and Incorporations

Rochester, N. Y.—The Feinberg Plumbing and Heating Company has been organized and incorporated, with a capital of $20,000, to establish and operate a plumbing and heating engineering and contracting business. Principals of the new concerns are Nathan Feinberg, G. Feinberg and Jacob Getelman.

Paterson, N. J.—The North Jersey Engineering Company has been organized and incorporated, with a capital of $25,000, to establish and operate a plumbing engineering and contracting business. The new firm is represented by the local law firm of Rosenfeld and Rosenfeld.

Rochester, N. Y.—With a capital of $120,000, the Empire Corporation has been chartered, to establish and operate a heating engineering and equipment business. T. H. Crone, local attorney, represents the new firm.

Los Angeles, Calif.—The Silver Plumbing Co. has engaged in business at 1044 Venice boulevard, under the management of Morris Silver.

Glendale, Calif.—E. Coker & Co. have engaged in the plumbing and heating business at 215 S. Grand boulevard, under the management of E. Coker and Lester A. Maiers.

Los Angeles, Calif.—The Day & Night Plumbing Co. has engaged in business at 8214 Santa Monica boulevard, under the management of Edward Warner and Daniel J. Moran.

Alexandria, Va.—The Sublette Heating Co., Inc., has been chartered here by Scott Sublette and others.

Brooklyn, N. Y.—With a capital of $1,000, Herman Rosenbluth and associates have organized and incorporated the Rosenbluth Plumbing Company. It is planned to establish and operate a plumbing engineering and contracting business. The new firm is represented by N. N. Holzer, 474 Gates avenue.

Birmingham, Ala.—The Hite Plumbing Company is the name of a new contracting concern, organized by Gene Hite and J. F. Greer.

Newark, N. J.—The Brownie Company, Inc., has been chartered, with a capital of $25,000, to establish and operate a plumbing and steamfitting contracting business. The new firm is represented by Harry Levin, local attorney.

Buffalo, N. Y.—The Economy Heating and Ventilating Company has been organized to establish and operate a heating engineering and contracting business. Principals of the new concern are Raymond M. Polley, 671 Richmond avenue, and Theodore H. Booth, 220 Norwood avenue.

ATTENTION PLEASE, MR. ENGINEER!

You, as an experienced Engineer, can judge and decide problems of temperature to solidify fat.

Only **Water Cooling** Grease Separator and Catch Basins will **chill** the **water,** congeal and retain the grease.

Our more than thirty years' experience originating and designing Modern Sanitary Appliances is your assurance of satisfaction.

Use our Catalog to obtain first hand and reliable information. Sold by reliable Wholesalers everywhere.

Compound Injector & Specialty Co.
George J. Dehn, S. E., President
THE PIONEERS—(*Established 1897*)
Originators, Designers and Sole Manufacturers
DEHNSANIGARD
THE QUALITY GOODS
Trade Mark Registered U. S. Pat. Office
419-421 N. Laramie Ave. Chicago, Ill., U. S. A.

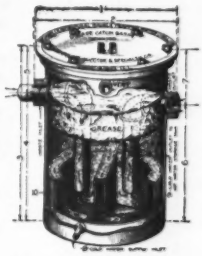


Fig. No. 150 and larger sizes (Patented and Patents Pending)

Dehn's "CentrifugaL" Double Trapped Water Cooling Grease Separator and Catch Basin, tested 250 pounds cold water pressure.

FULTON Sylphon FOR TEMPERATURE CONTROL

PROFITS « « in Automatic Room Temperature Control with SYLPHON THERMOSTATIC RADIATOR VALVES

Replacing ordinary radiator valves, they regulate room warmth by regulating steam flow to each radiator. Rooms never get too hot or too cold. Save fuel. Real profits in sale and installation. Write for Bulletin UD-250.

FULTON SYLPHON CO.
KNOXVILLE, TENN., U.S.A.

IMPROVED "WILHELMI" COPPER RANGE BOILERS

Due to the special construction of the "Wilhelmi" the heads cannot pull apart and it is impossible for the boiler to collapse.

We prove this to ourselves before any boiler leaves our factory by hydraulically testing each boiler to 200, 250 or 300 pounds and recommend a working pressure of 42½% of the test pressure.

Install "Wilhelmi." Both you and your customer will be fully satisfied.

HAYES MFG. CO., *Makers,* Paterson, N. J.

SIMPLEX FLUSH VALVES
CADWELL AIR VALVES
PERFECTION FLOOR & CEILING PLATES
JUMBO PIPE HANGERS

ASK · FOR · THEM · BY · NAME

The BEATON & CADWELL MFG. CO.
Established 1894
NEW BRITAIN, CONN.

What Women Are Doing

It's a Great Life If Your Endurance Is Good!

Another complete short story, from the interesting biography of the wife of one of the men in the trade who, as you will find, . . doing much to promote her husband's business. This interesting story tells how this clever business woman helps in her husband's office

ANOTHER "specialty" that helped keep the wolf from the door was "asbestos-backed gas grates." At that time portable gas heaters were not so widely used as now, and many of the older homes had asbestos backed grates which needed repairs, or coal grates in which they wanted gas installed.

We ran an "ad" in the want column, "Asbestos-backed gas grates—special $17.50," and we were deluged with calls. Sometimes we would install five and six a day. We discontinued this "line" after the second year, however, having worked our way into bigger and more interesting outlets and been forced by competition who had learned of the great demand for such grates to reduce our price from $17.50 to $12.50, but we still remember our gas grate income pleasantly and even today we sometimes have a call for a repair from an old-timer who remembers us as the "gas-grate specialists."

As will be gathered from the above, we did anything at all for a start, but we had from the very beginning very advanced ideas on the merchandising of plumbing and heating. We resented the fact that a plumber was expected to have a shop in the alley, and though ours was little better than that then, we set to work immediately to establish a background worthy of a merchandiser on Main street.

The stationery which I ordered was of good quality and dignified appearance. I saw to it that every letter that left the office was neat and finished looking, and as I was the typist who performed on our second hand typewriter, and at that time was only able to operate with one finger or at the most two, many a letter had to be copied and recopied tediously before I thought it ready to go out to meet our public.

I painstakingly wrote dozens of these letters each day to owners of the better homes about service, for we reasoned that if we could get an entrance to them in that way, we could at least get acquainted and hope for better things. Soon we had cars with chauffeurs rolling up to the door. All who came were doubtless surprised that we did not look as important as we had sounded by letter, some may have turned away on that account, but many came in to become customers.

(To be continued)

Tampa Women Pledge Support to National President

On October 5, the Tampa, Fla., Women's Auxiliary enjoyed a baked bean supper to which the men were invited. Following the supper the women held their meeting, at which time Mrs. Frank Williams, president, read a letter from Mrs. J. Preston Perham, National president. Mrs. W. E. McAndrews, secretary, read a bulletin issued by Mrs. Perham. A letter of congratulations, in which the auxiliary pledged its full co-operation in the coming year, was sent to the National president.

It was voted to continue to support the activities of the Needlework Guild of America, and the auxiliary members will gather garments in the same manner as last year. Pillow cases will be made by the members. Mr. and Mrs. Lee Phillips of Lakeland were guests at this meeting.

Ogden Auxiliary Appoints New Secretary-Treasurer

The Ogden, Utah, Ladies' Auxiliary to the Sanitary and Heating Engineers' Association met at the home of Mrs. C. W. Bishop on October 1. All members were present. During the business proceedings an election was held at which time Mrs. Wharton was selected to serve as secretary and treasurer, replacing Mrs. W. R. Offerman, who is moving to Los Angeles. Mrs. Wharton in turn was replaced by Mrs. Milton Bachman in the office of vice president. Mrs. Bishop's table was decorated with a large bowl of garden flowers and she served mince pie and coffee as well as candies. Cards were played after the business session.

At the first meeting of the year, which was held on September 17, the members of the auxiliary heard an in-

teresting talk by Mr. Offerman, who is president of the men's organization. The meeting was held in the evening with all members present.

Cincinnati Auxiliary Holds Benefit Sale

The Cincinnati, Ohio, Women's Auxiliary met at the American building on Tuesday, October 6. A rummage sale, under the chairmanship of Mrs. A. J. Murphy, was held on October 17. Miss Alma Niesen, chairman; Miss Florence C. Manley, secretary; Mrs. A. J. Murphy; Mrs. Geo. Doench; Mrs. Robert Carroll comprise the committee for the auxiliary at the Ohio State Master Plumbers' convention, which will be held February 2, 3 and 4, 1932. Following the business meeting a social hour was enjoyed.

Miss Alma Niesen and Mrs. Edward Frank, both of Cincinnati. Miss Niesen is general chairman for the Auxiliary activities at the forthcoming convention of the Ohio Master Plumbers Association, which will be held in Cincinnati, February 2-4, 1932. Mrs. Frank is general chairman of the convention

Chicago Group Adopts Economy Program

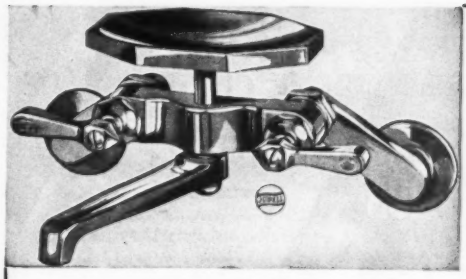
Mrs. T. I. Magan, president of the Women's Auxiliary to the Chicago Master Steamfitters Association, in calling the first meeting of the season recommended that the auxiliary dispense with the collection of dues at meetings, in view of general conditions. In doing this, the luncheons at the Palmer House will be discontinued. However, the meetings will be held there each month. Cards will be played and refreshments served. The board of directors agreed to this recommendation, feeling that this action would tend to increase attendance at the meeting, which will be held on the third Monday of each month.

Youngstown Women Give Party

The Youngstown, Ohio, Ladies' Auxiliary met on the afternoon of October 13 in the master plumbers' rooms. There was a good attendance and Mrs. M. F. Rielly, president, was in the chair. A Halloween party was given at the club rooms on October 21. A casserole dinner was served at six o'clock. This affair was for members of the auxiliary and their husbands. The chairman of the social committee was Mrs. S. Shelton. Following the dinner, bridge and five-hundred were enjoyed.

Mrs. Hornbrook Entertains Kansas City Women

Card parties held recently at the homes of Mrs. Ira Henderson and Mrs. William J. Hebenstreit opened the season for the Kansas City, Mo., auxiliary. These two affairs were followed by a banquet for the members of the master plumbers' association and their friends at Mrs. Ellis' tea rooms. This "get-together" affair proved



FOR YOUR REMODELING JOBS

Universal Swing Spout Faucet

Made in two different styles. Adjustable from 4" to 12½" and adaptable to either high or low back sinks. Nickel or Chrome finish.

Sold by leading Jobbers

MILWAUKEE FLUSH VALVE CO. Milwaukee, Wis.

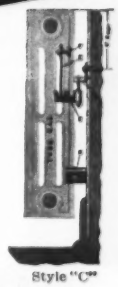
E-Z Radiator Hangers

USE THE hangers that MAKE GOOD Everywhere. Leading architects and contractors recommend and use them. Fully adjustable both horizontally and vertically. A complete line—Styles "R," "H," and "C" for all types of hung radiators and all conditions. Write for complete information.

HEALY-RUFF CO.

770 Hampden Ave., St. Paul, Minn., U.S.A.

Use E-Z Lavatory Hangers



Style "C"

Also Manufacturers of E-Z INSERT

EXPANSION HUB SOIL PIPE

A specially designed gasket (inserted in each hub at the foundry) puts an end to the troubles due to the natural contraction and expansion in soil, waste and vent lines.

Everywhere it has been used it has proved to be a real improvement. *Yet it costs nothing extra.* ASK YOUR WHOLESALER.

Manufactured to uniform specifications and sold by

ALABAMA PIPE COMPANY
ANNISTON FOUNDRY CO.
STRINGER BROS. CO., Inc.
THE WETTER PIPE CO.
INTERSTATE FOUNDRY COMPANY

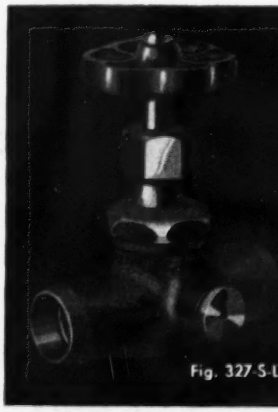


Fig. 327-S-L

REPUBLIC

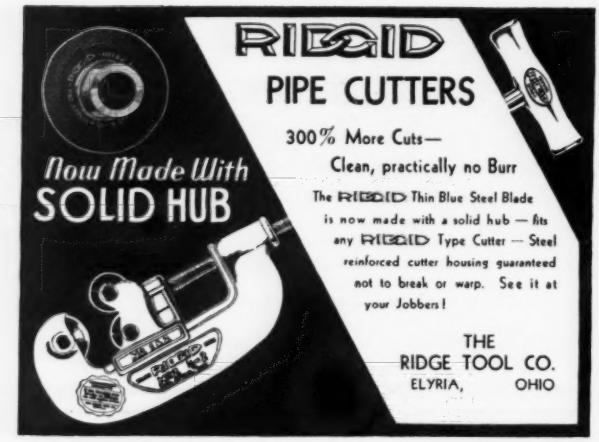
Compression Stop and Drain for

STREAMLINE COPPER PIPE

Licensed under Mueller Brass Company, Streamline Division, Patents 1,770,852 and 1,776,502.

THE REPUBLIC BRASS CO.

1623 East 45th St., Cleveland, O.


RIGID
PIPE CUTTERS
300% More Cuts—
Clean, practically no Burr
The RIGID Thin Blue Steel Blade is now made with a solid hub — fits any RIGID Type Cutter — Steel reinforced cutter housing guaranteed not to break or warp. See it at your Jobbers!
Now Made With
SOLID HUB
THE
RIDGE TOOL CO.
ELYRIA, OHIO

As you gain new business and the confidence of your customers by installing welded pipe systems, permanently leak-free, you will develop increasing confidence in Airco Oxygen if you give it a trial.

Its uniform quality and availability in any quantity should interest you if you are welding. If you are not, we shall be glad to explain how to gain customers, more business and even cut your overhead thru its use.

Air Reduction Sales Co.
Lincoln Bldg., E. 42nd St., New York City

Josam
TRADE MARK REG. U.S. PAT. OFF.
PRODUCTS
APPROVED SANITARY SPECIALTIES
JOSAM MANUFACTURING COMPANY
Cleveland, Ohio
4904 Euclid Bldg.
FACTORY: MICHIGAN CITY, INDIANA
BRANCHES IN ALL PRINCIPAL CITIES
Floor and Roof Drains, Sewer Valves, Closet Outlet Connections, Interceptors, etc.

TABER SUMP PUMPS IN GENERAL USE

Built for 5 ft. pit. Single and Duplex Units

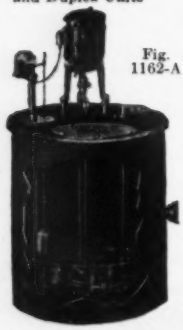


Fig. 1162-A

Sold with and without tank

The larger Taber Sump and Sewage Pumps are being specified and used on jobs requiring high grade equipment. Following are single unit sizes in general use. . . . 1750 R.P.M. 60 Cycle and Direct Current.

Type	G.P.M.	Head	Outlet,in.	Plate in.	H.P.	Wgt. lbs.
AL-25-2	25	20	1	24	¼	272
AL-50-2	50	20	1¼	32	¾	350
AL-75-2	75	20	1½	36	1	436
AL-100-2	100	20	2	36	1½	481
AL-150-3	150	20	2½	36	2	607
AL-200-3	200	30	3	36	3	675
AL-300-3	300	30	4	36	5	772

Write for complete Bulletin SS-629

TABER
TABER PUMP CO. Est. 1859
Taber Pump Co., 290 Elm St., Buffalo, N.Y.

very successful, more than one hundred reservations being sold.

The October meeting took place at the home of Mrs. E. D. Hornbrook. A delicious luncheon was served. The table decorations, a gift from Mrs. W. Dunlap, were lovely. There was a good attendance and many plans were outlined for the coming season. A vote of thanks from the 22 members present was given to the hostess for her charming hospitality.

Mrs. Herbert Pardee and Mrs. E. A. Kuebler have the sympathy of the members in the recent death of Mr. Pardee and Mrs. Kuebler's mother, who had lived with her daughter for many years. Mr. Pardee's funeral was attended by representatives from the master plumbers' association and the auxiliary, and the funeral of Mrs. Kuebler's mother was also attended by many members of the auxiliary.

Indianapolis Auxiliary Holds October Meeting

The regular October meeting of the Indianapolis, Ind., auxiliary was held at Whispering Winds. Preceding the meeting a delightful luncheon was served. The meeting was opened by Mrs. G. T. Watson, president. It was voted to give a party for the members and their husbands at the home of Mrs. Herbert Bauer, 1202 N. Kealing avenue.

The next meeting will be held at the home of Mrs. John Anderson, 4509 E. Tenth street, on November 13.

Mrs. John J. Anderson, 4509 E. Tenth street, entertained the members of the auxiliary and their husbands on September 26. There were 20 in attendance. Cards and bunco were enjoyed. Mrs. Anderson served a delicious luncheon after the games were over.

South Side Auxiliary to Give Party Oct. 31

The first meeting of the season was held by the members of the South Side Auxiliary of Chicago at the Midland club, on September 9. Plans were completed at this meeting for the benefit card party which was held October 14 at Smyth's Furniture Co. The usual cards were enjoyed after the business meeting. Hostesses to the 29 members and guests attending were Mrs. McHugh, Mrs. Harris, Mrs. Tresch and Mrs. Wilson.

The auxiliary held its October meeting on the 7th. There were 28 present and the members were glad to welcome Mrs. Golden into the auxiliary. Plans for a fish and steak dinner, to be held October 31 at Levents', have

Top row, left to right: Mrs. C. C. Cole, Mrs. Chris. Werner, Mrs. Edward Wittreich and Mrs. Otto Viehweg, all of North Hudson. Bottom row: Mrs. F. Baker and Mrs. Alex. Thane, both of North Hudson; Mrs. Charles Werner, Jersey City, and Mrs. Charles Zimmermann, North Hudson. Photos taken at the annual convention of the New Jersey State Women's Auxiliary, held recently at Trenton

Top row, left to right: Mrs. H. W. Strader, first vice president, and Mrs. F. C. Stiller, president, Minneapolis auxiliary; Mrs. A. F. Peterson, president, and Mrs. Thomas Shetka, St. Paul auxiliary; Mrs. A. G. Nelson, third vice president, Minneapolis auxiliary. Second row: A group of ladies attending the annual convention of the Minnesota Master Plumbers' Association. Bottom row: Another group of ladies in attendance at the Minnesota convention, which was held recently at Minneapolis

just been completed by the entertainment committee. It will be a social affair at which the husbands will attend, with cards and dancing following the dinner. The meeting adjourned for a social hour. Hostesses were Mrs. Jones, Mrs. Myers, Mrs. Frank Shaw and Mrs. Strauss.

Germantown, Pa., Auxiliary Makes Plans for Season

A recent communication from the Germantown, Pa., auxiliary indicates that the organization is quite active. Meetings are held at Waterview Recreation Center with Mrs. Stevens, president, in charge. Before closing the meeting season last spring, it was decided to have an outing. Mrs. Stevens played hostess to a group of women at her summer home in Wildwood, N. J.

Minneapolis Auxiliary Gives Radio Broadcast

The Minneapolis, Minn., Women's Auxiliary met on October 20 at the Oak Grove hotel, luncheon being served to the 38 present. Hostesses were Mrs. Fred Steller, Mrs. J. F. Martin, Mrs. Walter Dahlstrom, Mrs. E. L. Hessel and Mrs. V. E. Beaudry. At 3:45 o'clock the auxiliary members broadcast over station WDSY at Oak Grove hotel. Mrs. Stiller, president, explained the objectives of the organization, that it was not merely a social organization but did a great deal of charity work. Mr. M. Porter, association member, spoke on "Modern Improvements in the American Home." Mrs. L. O. Klopfer, auxiliary member and her sister, Mrs. O. R. Street, sang a duet. Miss O'Delia Baron, accompanied by Mrs. Rudolph Peterson, played two violin solos. Listeners-in reported the reception was fine and the program was as good as any they had heard over that station. The auxiliary members have been invited to broadcast again.

On October 6, twenty members gathered at the headquarters. It was voted to give $15.00 to the community fund. The amendment committee submitted its suggestions for amendments to the by-laws. On October 9 the auxiliary's card party was held. Bridge and five hundred were played at 17 tables and luncheon was served. The proceeds from this affair were to be used for the Christmas Poor Relief. The auxiliary each year gives $100 to take care of about 12 families with food and clothing.

INCREASE YOUR PROFITS

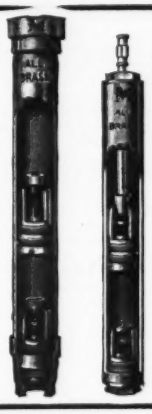
There's a good margin for you And satisfied customers too!

Sell Dole Air & Vacuum Valves

Write for full information.

THE DOLE VALVE COMPANY 1913 Carroll Ave., Chicago

How it looks inside Dole 2-B Vacuum Valves



MYERS CYLINDERS

Every deep well pump or water system installation requires a cylinder. As a matter of satisfaction and security it is easy to safeguard your customers and protect your own business by selling Myers Cylinders. Quality built, full size, full weight, full capacity, in all standard styles and sizes, they can be sold with confidence. If you are a pump or water system dealer it will pay you to investigate this splendid line of cylinders. Catalog on request.

THE F. E. MYERS & BRO. CO.
Ashland, Ohio

Paragon Offset Ball Cock

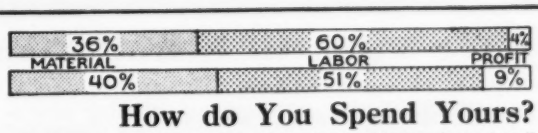
Made Throughout of Red Metal

FOR tanks with supply close to corner. You don't touch the supply connection when you renew the bronze seat. The refill tube neither splits nor corrodes. A quality fitting throughout. Write for folder on complete line.

Through your wholesaler

Fig. D-511 Pat.

The CENTRAL BRASS Mfg. Co.
PARAGON DIVISION CLEVELAND O.



How do You Spend Yours?

TWO contractors were handed $100 each to install valves on two identical jobs. Any remaining surplus would be theirs.

One decided to save money on materials. So he spent $36 for valves which cost him $60 to install. This left him a profit of $4.

The other decided that good materials would cost less to install so he spent $40 for O-B valves and they cost only $51 to install. This left him a profit of $9. How do you spend yours?

Ohio Brass valves are so designed and machined as to give "an extra profit in the make-up".

Ohio Brass Co.

1189-V Mansfield, Ohio

LIQUID SOAP FIXTURE

Latest design push-in type. Pressing of button delivers measured quantity of soap. At no position of button can soap run in steady stream. Nickel-Plated or Chromium finish. Send for catalog.

Imperial Brass Mfg. Co.
1231 West Harrison Street
Chicago, Illinois

Fig. 326

FIG. 326 Jenkins "Certified" Standard Iron Body Gate Valve for 125 lbs. steam or 200 lbs. oil, water, gas working pressure. JENKINS BROS., 80 White St., New York, N. Y.; 524 Atlantic Ave., Boston, Mass.; 133 No. Seventh St., Philadelphia, Pa.; 646 Washington Blvd., Chicago, Ill.; 1121 No. San Jacinto, Houston, Tex. JENKINS BROS., Ltd., Montreal, Can.; London, England.

Jenkins
BRONZE IRON STEEL
VALVES
Since 1864

If it's worth your skill *it's worth protection*

When you do a good heating job see that it *stays* good by giving it McDonnell Protection.

Every low pressure boiler is a prospect for the McDonnell No. 30 Series Safety Feeders. Every installation should mean at least $25.00 profit for you. A hookup detail book is a handy thing to have.

Write for it

McDONNELL & MILLER
400 N. MICHIGAN AVENUE, CHICAGO
Eastern Office: Grand Central Terminal, New York, N. Y.

Save Time In Installation

Extreme care in threading, accurate machining and the testing that follows, assure you DART UNIONS will go on without delay or any strength test.

TWO BRONZE SEATS, carefully ground and accurately machined make them leak-proof and non-corrosive.

Extra heavy nut and shoulder give added strength, assuring life long installation.

E. M. DART MFG. CO. :: Providence, R. I.
The Fairbanks Co., Sales Agents
Canadian Factory: Dart Union Co., Limited, Toronto, Canada

Pipe —— Lines
Connected by LYT

In spite of our recent announcement that jokes about school boys and their funny remarks, and parents who write letters to teachers, and then add funny postscripts, we think that this one—maybe because it comes from an institution for higher learning—ought to be spread on the minutes:

The college student had failed to pass a very important examination. Wishing to break the news gently to his parents, he sent the following wire to his elder brother: "Have failed to pass exam. Prepare father." The brother replied with this wire: "Father prepared. Prepare yourself."

THE MAID SITUATION

MISTRESS: Did you empty the water under the refrigerator?

NEW MAID: Yessum—and put in some fresh.

P. G. N., Chicago.

It is reported that recently a man in Los Angeles was shot at by a gangster. But a silver dollar in his pocket deflected the bullet and saved his life. A cynical editor adds this remark: Good thing he wasn't married.

Still, the result might have been the same if he'd had a thick wad of unpaid bills in his pocket.

A certain famous foreign statesman has declared that all nations are in the same boat. What he failed to divulge is—who is rocking the darned thing?

The Irish Parliament is passing a public safety bill making revolutions and that sort of thing illegal. That leaves only the Blarney Stone to draw tourists.

Attention is called to a recent ruling by a mid-western judge to the effect that there is no obligation to shout "Fore" when one is about to drive a golf ball.

Most of us, however, will continue to flatter ourselves.

One reason, reasons the editor of "Leighton's Gloom Chaser," that there are less railroad than auto accidents, is that the engineer isn't always hugging the fireman.

And that same editor gets off one that looks a little queer to us: A wonderful thing is the human brain, sez he. It starts working the moment you wake and never stops till you get to the office.

Perhaps idle men are idle because time hangs too heavily upon their hands.

PERHAPS THE LIEUTENANT HAD A FALL COLD

"Private Mulcahy," said the lieutenant, "take my horse down and have it shod."

He waited for several hours. Then, impatient, he sent for Mulcahy.

"Private Mulcahy," he demanded, "where is that horse I told you to have shod?"

Private Mulcahy turned pale. "Gosh! Lieutenant. Did you say shod?"

A gentle young thing asked a minister if it was sinful of her to remember with pleasure the fact that a young man had told her that she was beautiful. "Not at all," replied the minister. "He's an accomplished liar."

Which proves, perhaps, that the truth is more of a stranger than fiction.

L Y T.

Bath a Day Movement

177

is the number of cities and towns where master plumbers have distributed copies of "The Story of the Bath" for use in local schools. We have many other inquiries from schools not yet taken care of

ALERT plumbing contractors seem to find unusual ways of utilizing material, like "The Story of the Bath," when it is made available.

A letter from J. B. Rogers, whose company of the same name is located in Calgary, Alberta, wrote us recently: "As we are getting up a series of Boy Scout Troop lectures, I am desirous of getting some lectures on Sanitation to be delivered to these Scout Troops."

That is a new idea, to be added to the use of the booklet in schools, and by contractor members of clubs like the Kiwanis, Rotary, etc.

The twenty-minute program worked out by DOMESTIC ENGINEERING for use by master plumber members of such service clubs has met with an enthusiastic response, and has been used by contractors in a number of cities.

A complimentary copy of "The Story of the Bath" and of the program will be sent to you on request.

Little Sentences That Sell

Write one of these BLACK BOARD EPIGRAMS on your window or bulletin board each day. Many master plumbers and heating contractors find them real business getters.

No luck at all is certainly hard luck.

* * *

Silence is a difficult argument to beat.

* * *

A flood of tears indicates troubled waters.

* * *

Good things go as easily as bad things come.

* * *

Hope is the dream a man has when awake.

* * *

Two essentials to success are dollars and sense.

* * *

Mirthfulness and the blues are never chummy.

* * *

Many a man who refuses to labor works other men.

* * *

Consideration of others is a good brand of charity.

* * *

No man favors expansion—of that little bald spot.

* * *

Many men who get credit for keeping their tempers have none.

QUALITY SPRINKLER DRAINAGE FLANGED AND STEAM FITTINGS

SEMLER COMPANY
JEANNETTE-PA.
SURE FIT FITTINGS

REMEMBER THIS!

STASCO EMPIRE SEAMLESS SEATS

are guaranteed for 5 years not to crack, chip, craze, peel or discolor and to give absolute satisfaction.

STANDARD TANK & SEAT CO.
CAMDEN :: N. J.

"EBCO" Dishwashing SINK
with built-in dishpan

Let us tell you how to turn idle hours into extra profits. Send for copy of "A New Selling Slant". It does not obligate you in any way.

The D. A. EBINGER SANITARY MANUFACTURING CO.
411 West Town Street
Columbus, Ohio

G & C no matter what

The small range boiler is a G&C special product, special in materials, design and workmanship and from there on up to the largest high pressure copper tank, you'll find G&C special quality in all. No matter what the tank requirements, G&C can fill them best.

Write for our catalog.

GERSTEIN & COOPER CO.
1 W. Third St. So. Boston, Mass.

E. N. COKEFAIR, INC.
New York, N. Y.

G. MASON PRICE
Montreal, P. Q.

GERSTEIN & COOPER CO.
522 Park Avenue
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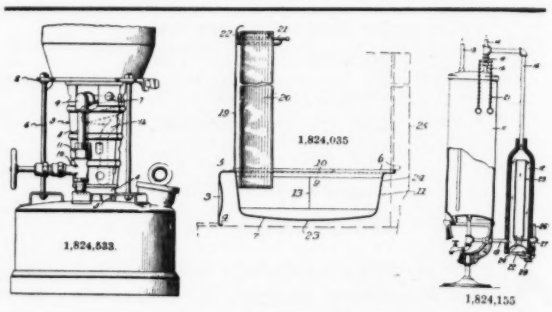
PATENTS

Plumbing Department

1,824,533. Fire Pot Construction. William Blackewitz, Detroit, Mich., assignor, by mesne assignments, to Clayton & Lambert Manufacturing Company, Detroit, Mich., a Corporation of Delaware.

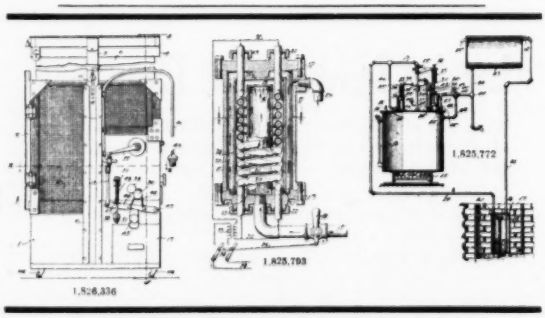


1,824,035. Shower Bathtub. John C. Cromwell, Alliance, Ohio, assignor to The Steel Sanitary Company, Alliance, Ohio, a Corporation of Ohio.

1,824,155. Water Supply Heater. Arthur J. Kercher, Berkeley, and William Wesley Hicks, San Francisco, Calif., assignors to Wesix National Company, San Francisco, Calif., a Corporation of Delaware.

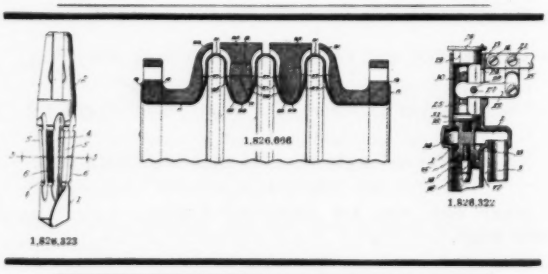
1,826,336. Shower Bath. Howard Clayton Woolwine, Fayetteville, W. Va.

1,825,793. Electric Heating System for Fluids. Herbert Heroy, Belmar, N. J.



1,825,772. Automatic Vacuum, Pressure Gravity Water System. Hugh L. Boggs, Savannah, Ga., assignor of one-fourth to Frank Piotti and one-fourth to Karrey Moomjian, Savannah, Ga.

1,826,323. Combined Drill, Reamer and Tap. Frank



H. Mueller, Decatur, Ill., assignor to Mueller Co., Decatur, Ill., a Corporation of Illinois.

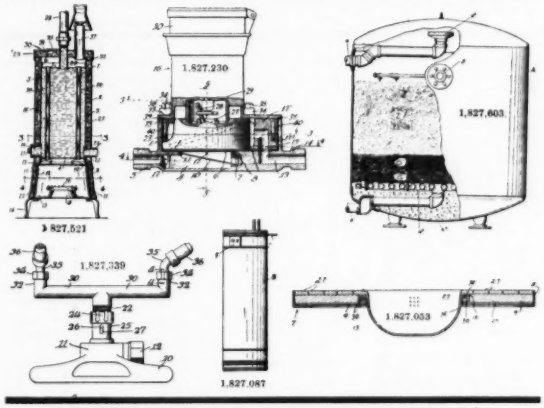
1,826,666. Expansion Joint. Almon R. Lawrence, Medford, Mass., assignor to E. B. Badger & Sons Company, Boston, Mass., a Corporation of Massachusetts.

1,826,322. Ball Cock. Robert H. Mueller, Decatur, Ill., assignor to Mueller Co., Decatur, Ill., a Corporation of Illinois.

1,827,521. Water Heater. Edward M. Heathman, Columbus, Ohio, assignor to F. O. Schoedinger, Columbus, Ohio.

1,827,230. Water Meter. Leo G. Haase, Long Beach, Calif.

1,827,603. Method of and Means for Feeding a Refrigerating Brine Solution to the Top Surface of a Zeolite Bed in a Zeolite Water Softener of the Filter Type. Eskel Nordell and Walter J. Hughes, Fort Wayne, Ind., assignors, by mesne assignments, to The Permutit Company, New York, N. Y., a Corporation of Delaware.



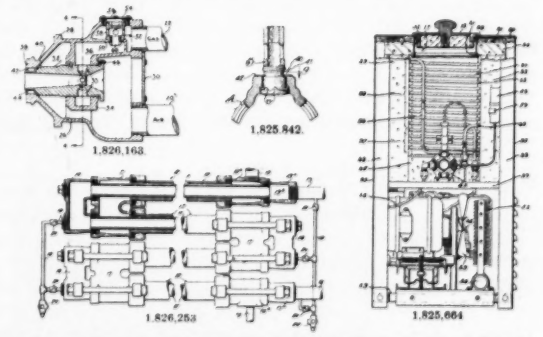
1,827,339. Lawn Sprinkler. William Steininger, Berwyn, Ill., assignor to W. D. Allen Manufacturing Company, Chicago, Ill., a Corporation.

1,827,087. Electric Water Heater. Lee P. Hynes, Albany, N. Y., assignor to Hynes & Cox Electric Corporation, Albany, N. Y., a Corporation of New York.

1,827,053. Lavatory Construction. Carl C. Veneman, Los Angeles, Calif.

Heating Department

1,826,163. Combined Gas Burner and Mixing Apparatus. Hugh B. Barber and William M. Hepburn, Toledo, Ohio, assignors to Surface Combustion Corporation, Toledo, Ohio, a Corporation of New York.



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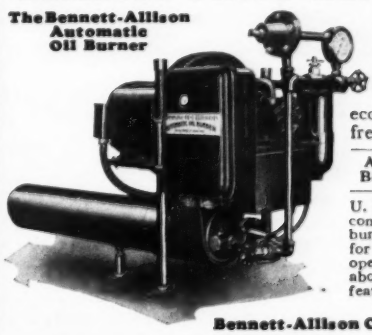

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1,825,842. Pipe Hanger. Lothar R. Zifferer, Columbia, Pa.; Mabel C. Zifferer, Harry E. Champion, and H. Nelson Albright, executors of said Lothar R. Zifferer, deceased, assignors to Columbia Malleable Castings Corporation, Columbia, Pa., a Corporation of New York.

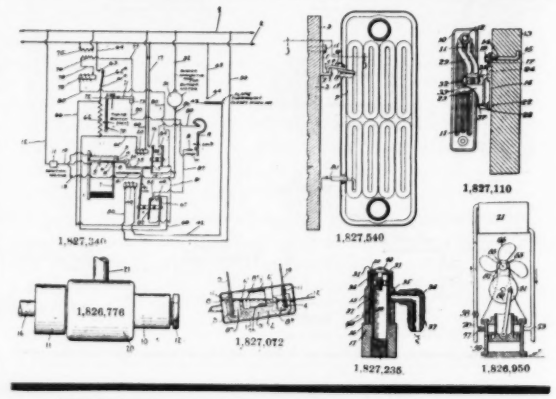
1,826,253. Liquid Cooling Apparatus. Henry H. Marshall, Highland Park, N. J., assignor to Brunswick-Kroeschell Company, New Brunswick, N. J., a Corporation of New Jersey.

1,825,664. Refrigerating Apparatus. Harry B. Hull and George F. Hofferberth, Dayton, Ohio, assignors to Frigidaire Corporation, Dayton, Ohio, a Corporation of Delaware.

1,827,340. Heat Regulating Device. Daniel G. Taylor, Minneapolis, Minn., assignor to Minneapolis-Honeywell Regulator Company, Minneapolis, Minn., a Corporation of Delaware.

1,827,540. Radiator Hanger. Thomas O'Connell, St. Paul, Minn.

1,827,110. Radiator Hanger. Thomas A. Ridder, Whitman, Mass.



1,826,776. Liquid Fuel Burner and Method of Atomizing Liquids. Charles O. Gunther, Grand-View-on-Hudson, N. Y.

1,827,072. Mercury Switch. Paul K. Cramblet, Milwaukee, Wis., assignor by mesne assignments, to Minneapolis-Honeywell Regulator Company, Minneapolis, Minn., a Corporation of Delaware.

1,827,235. Adjustable Fuel Burning Nozzle. Graham Wylie Jarvis, Charlottesville, Pa., assignor of one-half to John E. Shepherd, Charlottesville, Pa.

1,826,950. Heat Exchange Apparatus. Arthur E. Paige, Philadelphia, Pa., assignor to John Wood Manufacturing Company, Conshohocken, Pa., a Corporation of Pennsylvania.

◆

Cleveland, Ohio—Work is expected to start soon on a large city project, the underground exhibition hall and garage on Lakeside avenue. Its estimated cost is $1,500,000.

Wauwatosa, Wis.—Plans have been approved by the state industrial commission for the County General hospital here. Van Ryn and De Gelleke are the architects. The cost is approximately $420,000.

New York, N. Y.—Plans have been filed with the Manhattan Bureau of Buildings for a six-story nurses' home on Welfare Island, to cost approximately $500,000. Van Wart & Wein are the architects.

Big Springs, Tex.—Work is expected to start soon on the City Auditorium and fire station here, to cost $200,000.

Lincoln, Nebr.—Bids were opened on October 19 for construction of the $200,000 Young Women's Christian Association building here.

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FOR SALE—PLUMBING AND HEATing business established twenty-five years. Retiring on account of health. A jobbing trade sufficient to keep two men going. Located in Yonkers, N. Y. Address Key 678, "Domestic Engineering," 1900 Prairie Avenue, Chicago.

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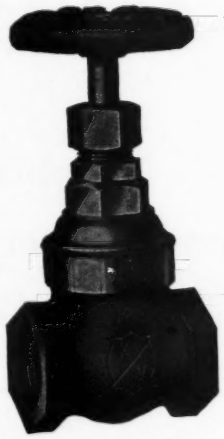

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